

MAY 17 - 22

2019

VSS



PROGRAM

19th Annual Meeting  
St. Pete Beach, Florida

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# VISION SCIENCES SOCIETY

19th Annual Meeting, May 17-22, 2019  
TradeWinds Island Resorts, St. Pete Beach, Florida

## PROGRAM

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2001 – 2005

# PRESIDENT'S WELCOME

## Welcome to the 19th Annual Meeting of the Vision Sciences Society

The VSS Board of Directors, with the dynamic duo of Shaune Wilson and Shawna Lampkin, ably assisted by Jeff Wilson, have organized the meeting, showcasing the scope of VSS in nearly 1,400 presentations and 6 symposia. You can enjoy 12 satellite sessions to get technical advice on various topics and network through various social events.

Beginning Saturday, you can learn about new products and services from the dozen exhibitors promoted at VSS. We are grateful to VPixx Technologies for their ongoing sponsorship of the Keynote Lecture. We are also grateful to Facebook Reality Labs (formerly Oculus) for sponsoring Demo Night.

We thank Elsevier for their continued support of the Student Travel Awards and the Young Investigator Award.

Please join me in congratulating the diverse and talented Student Travel Award winners. FoVeA supports VSS with the attendance of 6 students. For the first time, VSS has obtained funds from the National Eye Institute to provide travel grants to 34 post-doctoral and 24 early career scientists.

Several events have been organized for our students. On Saturday and Sunday are Student Workshops, one on peer-networking and the other on time management as a young researcher. Monday afternoon is the Undergrad Meet & Greet, offering students an opportunity to meet peers and talk with graduate students. This is followed by Meet the Professors, a chance to chat casually with faculty.

Tuesday afternoon, Connect with Industry provides an opportunity for you to interact with representatives of industry and government agencies to discuss opportunities for vision scientists in their organizations.

Each year, VSS welcomes many colleagues with young children. The Board is pleased this year to introduce a new high-quality childcare program offered by ACCENT on Children's Arrangements, Inc. We are anxious to learn how the parents and kids like this pilot program.

We regret that some of our colleagues cannot attend due to the policies of the current United States administration and please know that the Board has instituted more flexible policies about presentation and discussed holding the meeting outside the United States.

To engage in advocacy around this and other issues, VSS is now a member of the Federation of Associations in Behavioral & Brain Sciences (FABBS), a coalition of scientific societies advancing the sciences of mind, brain, and behavior by communicating the importance of basic and applied research to policy makers and the public as well as advocating for policies and funding from the NIH and

NSF. Our FABBS membership also offers an opportunity to recognize the achievements of more VSS members. For her insightful research on how the visual system creates a percept of a continuously stable world from an ever-changing stream of sensory input, Julie Golomb, from The Ohio State University, will receive the FABBS Early Career Impact Award.

The Public Lecture will appear at a new venue, the St. Petersburg Public Library, offering new opportunities to share iconic narratives about vision research. Peter Thompson, from the University of York, will deliver this year's Public Lecture: Visual Illusion in the Real World.

The 2019 Keynote Address will be delivered by William T. Freeman, the Thomas and Gerd Perkins Professor of Electrical Engineering and Computer Science, Massachusetts Institute of Technology and Google Research. He will describe his motion microscope that enables visualization of the invisible through detection and amplification of normally imperceptible fluctuations in movies.

The Ken Nakayama Medal for Excellence in Vision Science will be awarded to Concetta Morrone for her inter-disciplinary insights into how we segment visual scenes into functional objects, how vision interacts with the motor system, and how the brain reorganizes during development and disease. The Davida Teller Award will be presented to Barbara Doshier for her investigations of cue combination in visual perception, formulation of powerful tests and models of visual attention, and network models of visual perceptual learning. The Elsevier/VSS Young Investigator Award will go to Talia Konkle for showing that object recognition depends on the physical size of objects in the world and that long-term memory retrieval is driven by conceptual more than perceptual similarities. Please join us on Monday for the Awards Ceremony, which will include presentations from the three award recipients.

Finally, with fondness and respect we remember the colleagues and pioneers lost this year: Aaron Clarke, Robert Fox, Barrie Frost, Andrei Gorea, Andrea Li, Jacob Nachmias, Jan van Gisbergen, and Charlie Gross.

Whether this is your first VSS meeting or you are a regular attendee, the VSS Board wants to hear your suggestions for improving the meeting. Please join the conversation at the Business Meeting on Tuesday.

I look forward to seeing you at VSS,

Jeffrey D. Schall, Ph.D.

President, VSS Board of Directors, 2018-2019.

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## **Opening Night Reception**

**Friday, May 17, 7:00 - 9:30 pm**

Save Friday evening for the spectacular VSS Opening Night Reception! The reception will take place on the beach and beachside sundecks from 7:00 – 9:30 pm.

Don't forget your drink tickets, which can be found in the back of your badge. Your drink tickets are also good at Demo Night and Club Vision. Friends and family may accompany you with the purchase of a Friends and Family Pass. See the Registration Desk to purchase passes.

Prepare to sink your toes into the sand and enjoy this fantastic event! Please remember to wear your badge.

# MEETING SCHEDULE

## Wednesday, May 15

9:00 am – 6:00 pm Computational and Mathematical Models in Vision (MODVIS) *VSS Satellite* Horizons

## Thursday, May 16

9:00 am – 6:00 pm Computational and Mathematical Models in Vision (MODVIS) *VSS Satellite* Horizons

## Friday, May 17

7:30 am – 9:30 pm VSS Social Lounge Banyan/Citrus  
VSS Quiet Lounge Glades

8:30 – 9:30 am Coffee Break Garden Courtyard

8:30 – 11:45 am Computational and Mathematical Models in Vision (MODVIS) *VSS Satellite* Horizons

8:30 am – 6:00 pm Registration Open Grand Palm Colonnade

9:00 – 11:00 am Improving the Precision Of Timing-Critical Research with Visual Displays *VSS Satellite* Jasmine/Palm

11:00 – 11:45 am Psychophysics Toolbox Forum *VSS Satellite* Jasmine/Palm

11:30 am – 12:00 pm Coffee Break Garden Courtyard

11:30 am – 2:30 pm Grab and Go Lunch (cash) Garden Courtyard

12:00 – 2:00 pm Symposium 1: Reading as a Visual Act: Recognition of Visual Letter Symbols in the Mind and Brain Talk Room 1

12:00 – 2:00 pm Symposium 2: Rhythms of the Brain, Rhythms of Perception Talk Room 2

2:00 – 2:30 pm Coffee Break Garden Courtyard

2:30 – 4:30 pm Symposium 3: What Can Be Inferred About Neural Population Codes from Psychophysical and Neuroimaging Data? Talk Room 1

2:30 – 4:30 pm Symposium 4: Visual Search: From Youth to Old Age, from the Lab to the World Talk Room 2

4:30 – 5:00 pm Coffee Break Garden Courtyard

5:00 – 7:00 pm Symposium 5: What Deafness Tells Us About the Nature of Vision Talk Room 1

5:00 – 7:00 pm Symposium 6: Prefrontal Cortex in Visual Perception and Recognition Talk Room 2

7:00 – 9:30 pm Opening Night Reception Beachside Sun Decks

## Saturday, May 18

7:30 am – 6:45 pm Registration Open Grand Palm Colonnade

7:30 am – 9:30 pm VSS Social Lounge Banyan/Citrus  
VSS Quiet Lounge Glades

7:45 – 8:30 am Morning Coffee & Continental Breakfast Garden Courtyard and Pavilion

8:15 – 9:45 am Morning Talk Session 1: Eye Movements: Perception Talk Room 1

8:15 – 9:45 am Morning Talk Session 1: Spatial Vision: Crowding, eccentricity, natural image statistics, texture Talk Room 2

8:30 am – 12:30 pm Morning Poster Sessions Banyan Breezeway and Pavilion

9:00 am – 5:30 pm	Exhibits Open	Pavilion
9:45 – 10:30 am	Coffee Break	Garden Courtyard and Pavilion
10:45 am – 12:30 pm	Morning Talk Session 2: 3D Perception	Talk Room 1
10:45 am – 12:30 pm	Morning Talk Session 2: Attention: Animacy, attentional blink	Talk Room 2
11:30 am – 2:30 pm	Grab and Go Lunch (cash)	Garden Courtyard
12:30 – 2:30 pm	Lunch Break (on your own)	
12:45 – 1:45 pm	Student/Postdoc Workshop: Peer-networking for Students and Postdocs	Jasmine/Palm
12:45 – 1:45 pm	VSS Workshop on Funding in the US	Sabal/Sawgrass
2:30 – 4:15 pm	Afternoon Talk Session 1: Perception and Action: Locomotion, wayfinding	Talk Room 1
2:30 – 4:15 pm	Afternoon Talk Session 1: Attention: Shifting, tracking	Talk Room 2
2:45 – 6:45 pm	Afternoon Poster Sessions	Banyan Breezeway and Pavilion
4:15 – 5:00 pm	Afternoon Coffee & Snack	Garden Courtyard and Pavilion
5:15 – 6:45 pm	Afternoon Talk Session 2: Faces: Neural mechanisms	Talk Room 1
5:15 – 6:45 pm	Afternoon Talk Session 2: Development	Talk Room 2
7:15 – 8:15 pm	Keynote Address: William T. Freeman	Talk Room 1-2
8:30 – 10:30 pm	Large-scale datasets in visual neuroscience <i>VSS Satellite</i>	Jasmine/Palm

## Sunday, May 19

7:30 am – 6:45 pm	Registration Open	Grand Palm Colonnade
7:30 am – 9:30 pm	VSS Social Lounge VSS Quiet Lounge	Banyan/Citrus Glades
7:45 – 8:30 am	Morning Coffee & Continental Breakfast	Garden Courtyard and Pavilion
8:15 – 9:45 am	Morning Talk Session 1: Shape, Motion, Color and Depth: Integration	Talk Room 1
8:15 – 9:45 am	Morning Talk Session 1: Visual Memory: Neural mechanisms	Talk Room 2
8:30 am – 12:30 pm	Morning Poster Sessions	Banyan Breezeway and Pavilion
9:00 am – 5:30 pm	Exhibits Open	Pavilion
9:45 – 10:30 am	Coffee Break	Garden Courtyard and Pavilion
10:45 am – 12:30 pm	Morning Talk Session 2: Faces: Dynamics, convolutional neural networks	Talk Room 1
10:45 am – 12:30 pm	Morning Talk Session 2: Perceptual Organization	Talk Room 2
11:30 am – 2:30 pm	Grab and Go Lunch (cash)	Garden Courtyard
12:30 – 2:30 pm	Lunch Break (on your own)	
12:45 – 1:45 pm	Student & Postdoc Workshop: How to Spend Your Time Well as a Young Researcher	Jasmine/Palm
12:45 – 1:45 pm	VSS Workshop on Funding Outside the US	Sabal/Sawgrass
2:00 – 3:00 pm	Public Lecture: Peter Thompson (offsite)	St. Petersburg Main Library
2:30 – 4:15 pm	Afternoon Talk Session 1: Objects and Scenes: Shape categorization, scene perception	Talk Room 1
2:30 – 4:15 pm	Afternoon Talk Session 1: Binocular Vision	Talk Room 2
2:45 – 6:45 pm	Afternoon Poster Sessions	Banyan Breezeway and Pavilion
4:15 – 5:00 pm	Afternoon Coffee & Snack	Garden Courtyard and Pavilion

5:15 – 7:15 pm	Afternoon Talk Session 2: Visual Search: Models, neural mechanisms	Talk Room 1
5:15 – 7:15 pm	Afternoon Talk Session 2: Visual Memory: Working memory	Talk Room 2
7:30 – 9:00 pm	FoVea (Females of Vision et al) Workshop <i>VSS Satellite</i>	Horizons

## Monday, May 20

7:30 am – 12:30 pm	VSS Social Lounge VSS Quiet Lounge	Banyan/Citrus Glades
7:45 – 8:30 am	Morning Coffee & Continental Breakfast	Garden Courtyard and Pavilion
7:45 am – 1:30 pm	Registration Open	Grand Palm Colonnade
8:15 – 9:45 am	Morning Talk Session 1: Attention: Models, neural mechanisms	Talk Room 1
8:15 – 9:45 am	Morning Talk Session 1: Object Recognition: Models, neural mechanisms	Talk Room 2
8:30 am – 12:30 pm	Morning Poster Sessions	Banyan Breezeway and Pavilion
9:00 am – 12:30 pm	Exhibits Open	Pavilion
9:45 – 10:30 am	Coffee Break	Garden Courtyard and Pavilion
10:45 am – 12:15 pm	Morning Talk Session 2: Object Recognition: Reading, domain-specific expertise	Talk Room 1
10:45 am – 12:15 pm	Morning Talk Session 2: Multisensory Processing	Talk Room 2
11:30 am – 2:30 pm	Grab and Go Lunch (cash)	Grand Palm Colonnade
12:30 – 1:45 pm	VSS Awards Session: Young Investigator Award, Davida Teller Award, Ken Nakayama Medal, Student Travel Awards, National Eye Institute Travel Grants, FABBS Early Career Impact Award	Talk Room 1-2
1:45 – 6:00 pm	Open Afternoon	
2:00 – 3:30 pm	Aesthetics Social <i>VSS Satellite</i>	Sabal/Sawgrass
2:00 – 4:00 pm	A hands-on crash course in reproducible mixed-effects modeling <i>VSS Satellite</i>	Glades
2:00 – 4:00 pm	WorldViz VR/AR Workshop: Virtual Reality Displays Break New Ground for Research Purposes <i>VSS Satellite</i>	Jasmine/Palm
2:00 – 4:00 pm	VISxVISION Workshop: Novel Vision Science Research Directions in Visualization <i>VSS Satellite</i>	Royal Tern
3:30 – 4:30 pm	Undergrad Meet & Greet	Banyan/Citrus
4:30 – 5:45 pm	Meet the Professors	Banyan Breezeway
6:00 – 8:00 pm	Demo Night Beach BBQ	Beachside Sun Decks, Banyan Breezeway (limited seating)
7:00 – 10:00 pm	Demo Night Demos	Talk Room 1-2, Jacaranda Hall, Royal Tern, Snowy Egret, Spotted Curlew

## Tuesday, May 21

7:30 am – 9:30 pm	VSS Social Lounge VSS Quiet Lounge	Banyan/Citrus Glades
7:45 – 8:30 am	Morning Coffee & Continental Breakfast	Garden Courtyard and Pavilion
7:45 am – 6:45 pm	Registration Open	Grand Palm Colonnade
8:15 – 9:45 am	Morning Talk Session 1: Object Recognition: Convolutional neural networks	Talk Room 1

8:15 – 9:45 am	Morning Talk Session 1: Temporal Processing	Talk Room 2
8:30 am – 12:30 pm	Morning Poster Sessions	Banyan Breezeway and Pavilion
9:00 am – 5:30 pm	Exhibits Open	Pavilion
9:45 – 10:30 am	Coffee Break	Garden Courtyard and Pavilion
10:45 am – 12:30 pm	Morning Talk Session 2: Spatial Vision: Models, neural mechanisms	Talk Room 1
10:45 am – 12:30 pm	Morning Talk Session 2: Attention: Cues, context	Talk Room 2
11:30 am – 2:30 pm	Grab and Go Lunch (cash)	Garden Courtyard
12:30 – 1:00 pm	VSS Business Meeting	Talk Room 2
12:30 – 2:30 pm	Canadian Vision Social <i>VSS Satellite</i>	Jasmine/Palm
1:00 – 2:30 pm	Connect with Industry	Sabal/Sawgrass
1:00 – 2:30 pm	Lunch Break (on your own)	
1:00 – 2:30 pm	VSS Committees Lunch <i>By Invitation Only</i>	Horizons
2:30 – 4:15 pm	Afternoon Talk Session 1: Objects and Scenes: Cortical category selectivity	Talk Room 1
2:30 – 4:15 pm	Afternoon Talk Session 1: Color and Light	Talk Room 2
2:45 – 6:45 pm	Afternoon Poster Sessions	Banyan Breezeway and Pavilion
4:15 – 5:00 pm	Afternoon Coffee & Snack	Garden Courtyard and Pavilion
5:15 – 7:15 pm	Afternoon Talk Session 1: Eye Movements: Models, neural mechanisms	Talk Room 1
5:15 – 7:15 pm	Afternoon Talk Session 2: Visual Search: Space, time	Talk Room 2
8:30 – 10:00 pm	Visibility: A Gathering of LGBTQ+ Vision Scientists and friends <i>VSS Satellite</i>	Jasmine/Palm
10:00 pm – 2:00 am	Club Vision	Talk Room 1

## Wednesday, May 22

7:30 am – 12:45 pm	VSS Social Lounge VSS Quiet Lounge	Banyan/Citrus Glades
7:45 – 8:30 am	Morning Coffee & Continental Breakfast	Garden Courtyard and Pavilion
7:45 am – 12:45 pm	Registration Open	Grand Palm Colonnade
8:15 – 10:00 am	Morning Talk Session 1: Perception and Action: Decision making, neural mechanisms	Talk Room 1
8:15 – 10:00 am	Morning Talk Session 1: Visual Memory: Long term memory	Talk Room 2
8:30 am – 12:30 pm	Morning Poster Sessions	Banyan Breezeway and Pavilion
10:00 – 10:45 am	Coffee Break	Garden Courtyard and Pavilion
11:00 am – 12:45 pm	Morning Talk Session 2: Perceptual Learning	Talk Room 1
11:00 am – 12:45 pm	Morning Talk Session 2: Motion Perception	Talk Room 2
1:00 – 3:00 pm	MacGyver-ing in vision science: interfacing systems that are not supposed to work together <i>VSS Satellite</i>	Chart

# KEYNOTE ADDRESS

## William T. Freeman

Thomas and Gerd Perkins Professor of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Google Research



William T. Freeman is the Thomas and Gerd Perkins Professor of Electrical Engineering and Computer Science at MIT, and a member of the Computer Science and Artificial Intelligence Laboratory (CSAIL) there. He was the Associate Department Head from 2011 – 2014.

Dr. Freeman's current research interests include machine learning applied to computer vision,

Bayesian models of visual perception, and computational photography. He received outstanding paper awards at computer vision or machine learning conferences in 1997, 2006, 2009 and 2012, and test-of-time awards for papers from 1990, 1995 and 2005. Previous research topics include steerable filters and pyramids, orientation histograms, the generic viewpoint assumption, color constancy, computer vision for computer games, and belief propagation in networks with loops.

He is active in the program or organizing committees of computer vision, graphics, and machine learning conferences. He was the program co-chair for ICCV 2005, and for CVPR 2013.

## Visualizations of imperceptible visual signals

Saturday, May 18, 2019, 7:15 pm, Talk Room 1-2

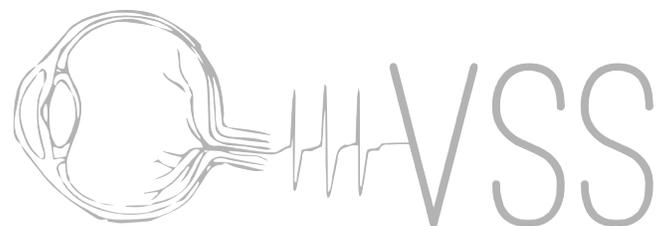
Using an image representation modeled after features of V1, we have developed a "motion microscope" that rerenders a video with the small motions amplified. I'll show motion magnified videos of singers, dancers, bridges, robots, and pipes, revealing properties that are otherwise hidden. Small photometric changes can also be measured and amplified. This can reveal the human pulse on skin, or people moving in an adjacent room.

Unseen intensity changes also occur when an occluder modulates light from a scene, creating an "accidental camera". I'll describe the invisible signals caused by corners and plants, and show how they can reveal imagery that is otherwise out of view.

I'll close by describing my white whale, the Earth selfie. This is an effort to photograph the Earth from space with ground-based equipment by using the Moon as a camera. I'll explain why this project matters, and will summarize recent progress.



Keynote Address is sponsored by VPixx Technologies, Inc. Visit [www.vpixx.com](http://www.vpixx.com).

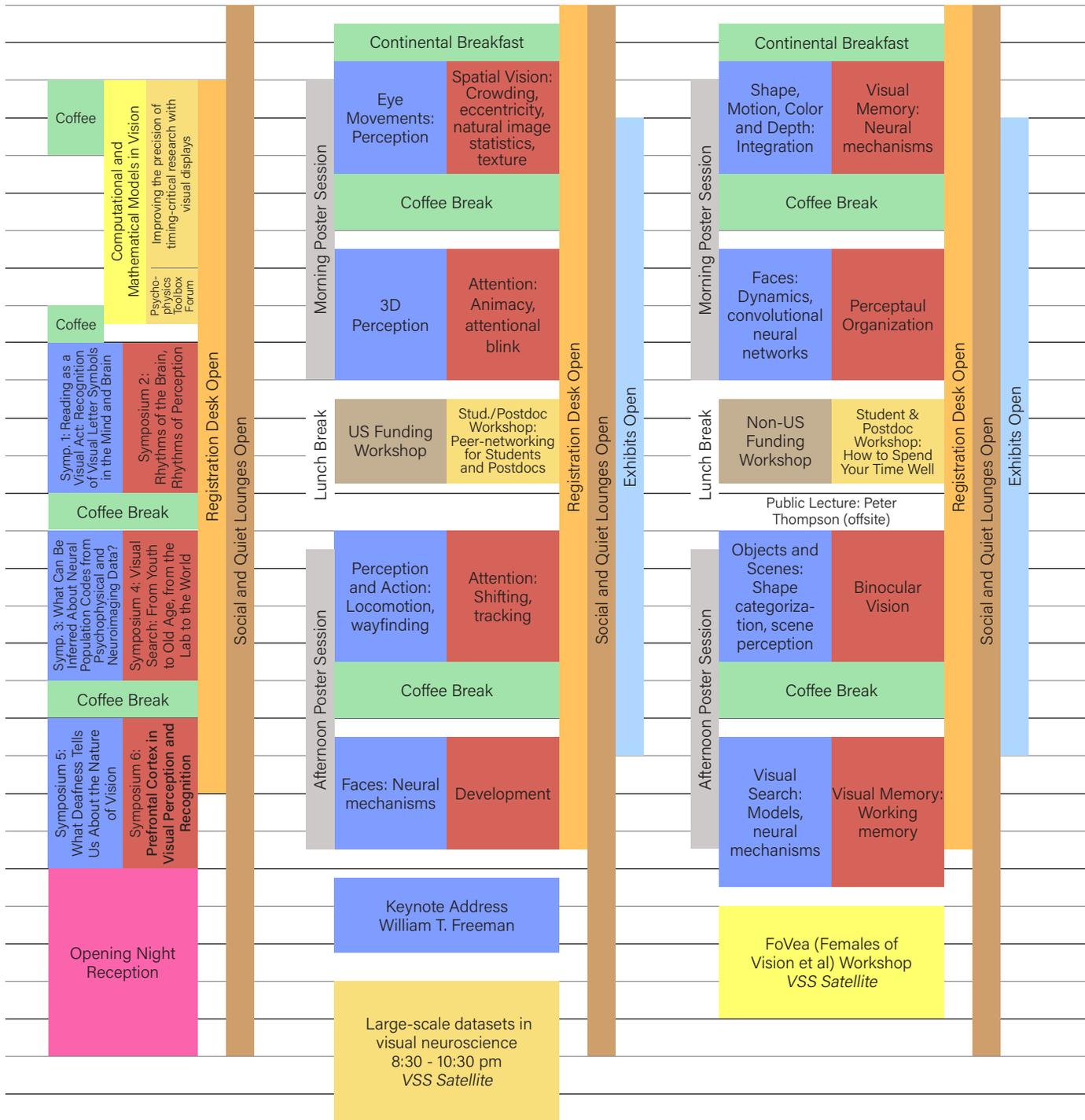


### Friday, May 17

### Saturday, May 18

### Sunday, May 19

7:00 am  
8:00 am  
9:00 am  
10:00 am  
11:00 am  
12:00 pm  
1:00 pm  
2:00 pm  
3:00 pm  
4:00 pm  
5:00 pm  
6:00 pm  
7:00 pm  
8:00 pm  
9:00 pm  
10:00 pm



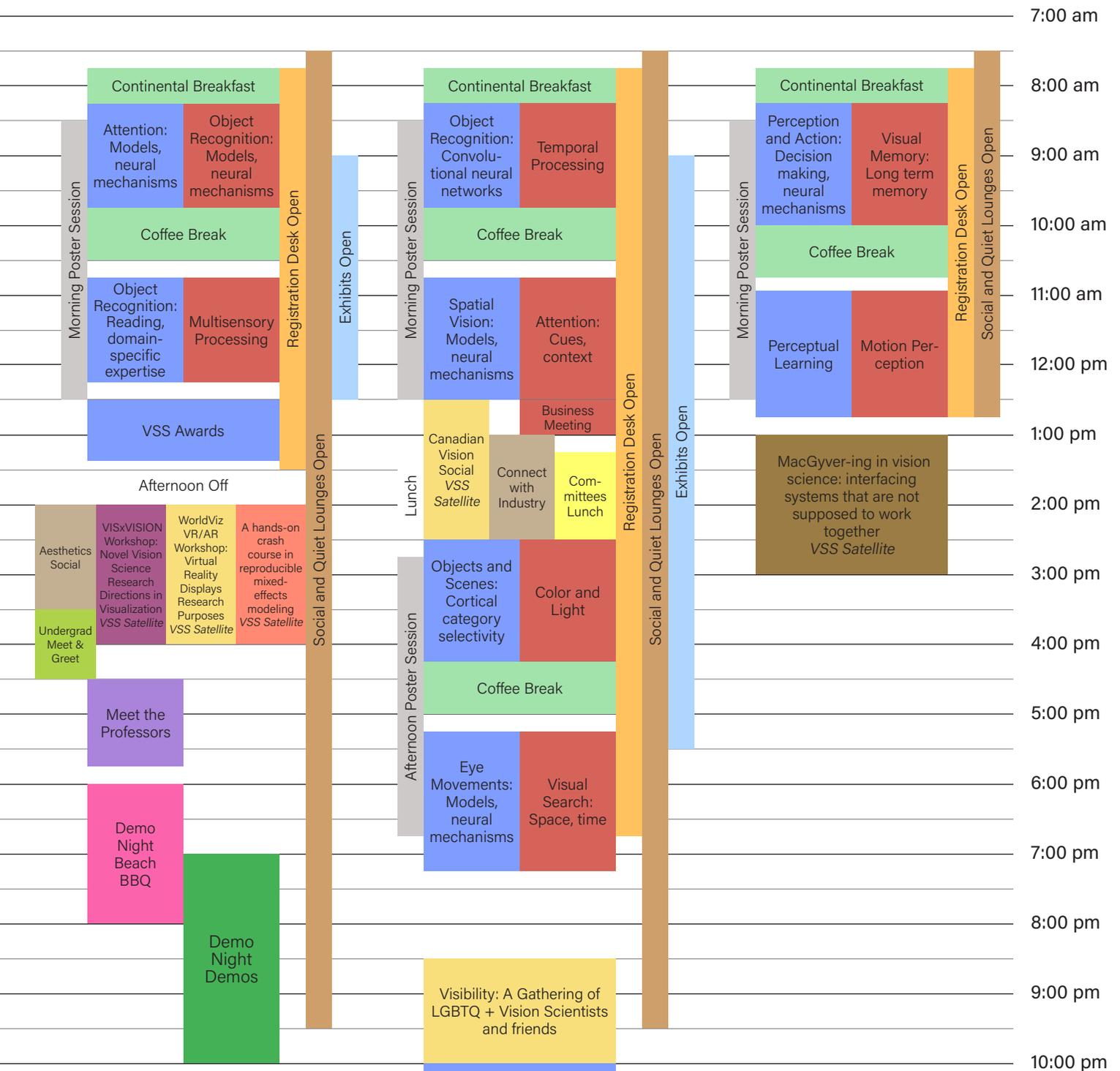
**Color Key:**

Posters in Banyan Breezeway and Pavilion	Jasmine/Palm	Sabal/Sawgrass	Royal Tern	Banyan/Citrus	Chart	See Meeting Schedule			
Talk Room 1	Talk Room 2	Grand Palm Colonnade	Banyan Breezeway	Pavilion	Garden Courtyard & Pavilion	Horizons	Banyan/Citrus Glades	Glades	Beachside Decks

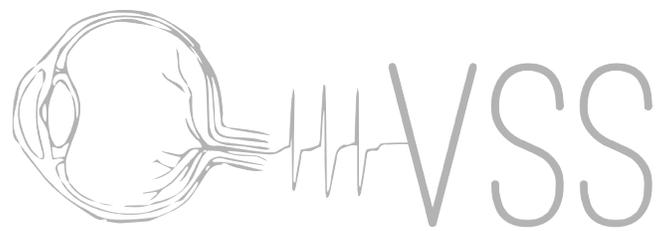
# Monday, May 20

# Tuesday, May 21

# Wednesday, May 22



Club Vision  
Dance Party  
10:00 pm - 2:00 am



# GRAPHICS COMPETITION

Congratulations to this year's winners of the annual graphics competition, Allison Bruning and Cristina R. Ceja.

Each year VSS hold a graphics competition seeking interesting visual images to be used for the annual meeting. There are two graphics competitions: a T-Shirt Design Competition and a Program Cover Competition, each with a cash award for the winner.

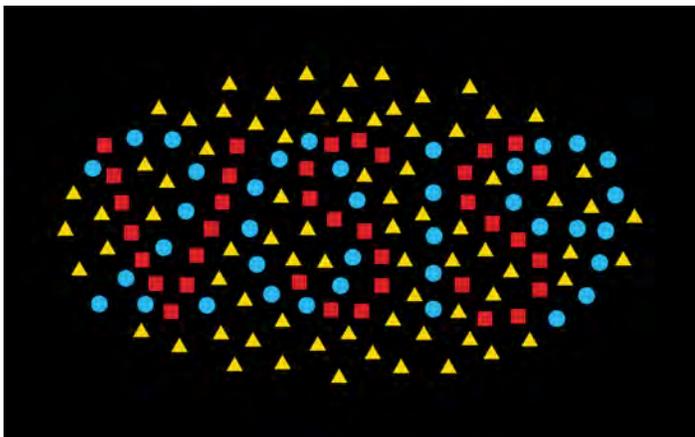


## Program Cover

### Allison Bruning

University of Texas at Austin

This design is the fruition of what I believe to be one of the most beautiful processes in visual perception: the transduction of light into neural responses. It is a simple design, drawing focus to the journey of light from the environment, through the optics of the eye, to the output of the optic nerve. The visual system is a wonder in itself and it is a privilege to study this phenomenon that is perception.



## T-Shirt Design

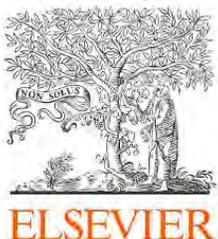
### Cristina R. Ceja

Northwestern University, Department of Psychology

This design uses perceptual grouping to overlay fun, yet simple shapes in a visually appealing display. This display is comprised of small individual shapes, but our visual system has the capability to group similar shapes and colors together to perceive larger and more complex shapes. If you selectively attend to red or squares, you will easily read "VSS". If attending instead to blue or circles, "2019" snaps into focus.

# SPONSORS

VSS thanks our 2019 sponsors for their generous support.



# TALK SCHEDULE

## Saturday, May 18

Time	Talk Room 1	Talk Room 2
8:15 – 9:45 am	Eye Movements: Perception	Spatial Vision: Crowding, eccentricity, natural image statistics, texture
10:45 am – 12:30 pm	3D Perception	Attention: Animacy, attentional blink
2:30 – 4:15 pm	Perception and Action: Locomotion, wayfinding	Attention: Shifting, tracking
5:15 – 6:45 pm	Faces: Neural mechanisms	Development

## Sunday, May 19

Time	Talk Room 1	Talk Room 2
8:15 – 9:45 am	Shape, Motion, Color and Depth: Integration	Visual Memory: Neural mechanisms
10:45 am – 12:30 pm	Faces: Dynamics, convolutional neural networks	Perceptual Organization
2:30 – 4:15 pm	Objects and Scenes: Shape categorization, scene perception	Binocular Vision
5:15 – 7:15 pm	Visual Search: Models, neural mechanisms	Visual Memory: Working memory

## Monday, May 20

Time	Talk Room 1	Talk Room 2
8:15 – 9:45 am	Attention: Models, neural mechanisms	Object Recognition: Models, neural mechanisms
10:45 am – 12:15 pm	Object Recognition: Reading, domain-specific expertise	Multisensory Processing

## Tuesday, May 21

Time	Talk Room 1	Talk Room 2
8:15 – 9:45 am	Object Recognition: Convolutional neural networks	Temporal Processing
10:45 am – 12:30 pm	Spatial Vision: Models, neural mechanisms	Attention: Cues, context
2:30 – 4:15 pm	Objects and Scenes: Cortical category selectivity	Color and Light
5:15 – 7:15 pm	Eye Movements: Models, neural mechanisms	Visual Search: Space, time

## Wednesday, May 22

Time	Talk Room 1	Talk Room 2
8:15 – 10:00 am	Perception and Action: Decision making, neural mechanisms	Visual Memory: Long term memory
11:00 am – 12:45 pm	Perceptual Learning	Motion Perception

## Speaker Information

Please arrive at the Talk Room no less than 30 minutes before the start of your session. Presenters are welcome to test their presentations between talk sessions. Please give priority to presenters whose talk is scheduled for the subsequent session.

The meeting rooms are equipped with a data/video projector and a projection screen. Presentations can be made from your Mac or PC laptop. A technician will be present in each room to handle any technical problems that may arise.

# POSTER SCHEDULE

## Morning Poster Schedule

Setup: 8:00 - 8:30 am  
Session: 8:30 am - 12:30 pm  
Even Authors Present: 9:30 - 10:30 am  
Odd Authors Present: 10:30 - 11:30 am  
Take down: 12:30 - 1:00 pm

## Afternoon Poster Schedule

Setup: 2:15 - 2:45 pm  
Session: 2:45 - 6:45 pm  
Even Authors Present: 3:45 - 4:45 pm  
Odd Authors Present: 4:45 - 5:45 pm  
Take down: 6:45 - 7:00 pm

## Poster Setup and Takedown

All poster sessions are held in Banyan Breezeway and Pavilion. The last three digits of your poster number indicate the number of your poster board.

Posters should be put up at the beginning of a session and taken down at the end. Authors of even numbered posters must be at their posters during the entire "Even Authors Present" time, and authors of odd numbered posters must be at their posters during the entire "Odd Authors Present" time. Authors may present longer if desired.

Please be courteous and take down your poster promptly at the end of the session so that the board is empty when the next presenter arrives to put up his or her poster. Push pins are available for your use and are located in the poster rooms.

## Saturday Morning, May 18

### Banyan Breezeway

Multisensory Processing: Auditory 1  
Faces: Disorders  
Perceptual Learning: Models, applications  
Object Recognition: Features, parts, reading

### Pavilion

Perceptual Organization: Figure ground, models, neural mechanisms  
Visual Memory: Encoding, retrieval  
Spatial Vision: Neural mechanisms  
Attention: Features and objects 1  
Temporal Processing: Mechanisms

## Saturday Afternoon, May 18

### Banyan Breezeway

Object Recognition: Categories, models, neural mechanisms  
Binocular Vision: Rivalry, suppression  
Spatial Vision: Crowding, eccentricity  
Color and Light: Psychophysics, neural mechanisms

### Pavilion

Visual Memory: Working memory, individual differences  
Visual Memory: Contents, capacity  
Spatial Vision: Models  
Visual Memory: Models, mechanisms  
Eye Movements: Saccades  
Methods: Theory, experiment, software

## Sunday Morning, May 19

### Banyan Breezeway

Perceptual Organization and Scene Perception: Art, aesthetics, image preference  
Attention: Selective  
Attention: Divided  
Attention  
Perception and Action: Reaching and grasping

### Pavilion

Object Recognition: Neural mechanisms  
Development: Lifespan, neural mechanisms  
Spatial Vision: Low-level coding, natural image statistics  
Eye Movements: Cognition

## Sunday Afternoon, May 19

### Banyan Breezeway

Faces: Experience, expertise  
Attention: Capture  
Perception and Action: Decision making, neural mechanisms  
Eye Movements: Perception  
Eye Movements: Natural and less natural scenes  
Perceptual Organization: Grouping

### Pavilion

Faces: Social and cultural factors  
Development: Atypical  
Scene Perception: Places, spatial structure, navigation, affordances  
Temporal Processing: Duration  
Motion: Models, neural mechanisms

## Monday Morning, May 20

### Banyan Breezeway

3D Perception: Models, mechanisms  
 Perception and Action: Walking, driving, navigating  
 Faces: Expressions, speech  
 Perceptual Learning: adaptation, neural mechanisms  
 Scene Perception: Cortical coding, neural mechanisms, neural networks  
 Motion: Biological

### Pavilion

Perceptual Organization: Ensemble coding, summary statistics  
 3D Perception: Shape  
 Visual Memory: Objects, features  
 Visual Memory: Neural mechanisms 1  
 Temporal Processing: Timing

## Tuesday Morning, May 21

### Banyan Breezeway

Faces: Gaze  
 Perception and Action: Arm movements  
 Perception and Action: Affordances  
 Binocular Vision: Surfaces  
 Scene Perception: Sets, gist, rapid categorization, temporal dynamics  
 Faces: Wholes, parts, features  
 Visual Memory: Long term memory

### Pavilion

Visual search: Dynamic fields, individual differences  
 Motion: Motion in depth, optic flow  
 Eye Movements: Transsaccadic vision  
 Perceptual Organization: Shapes, objects, contours, surfaces  
 Color and Light: Surfaces, materials  
 Visual Memory: Neural mechanisms 2

## Tuesday Afternoon, May 21

### Banyan Breezeway

Faces: Models, neural mechanisms  
 Binocular Vision: Stereopsis  
 Attention: Cues, individual differences, inattentional blindness  
 Attention: Features and objects 2  
 Attention: Neural mechanisms 1

### Pavilion

Multisensory Processing: Auditory 2  
 Perception and Action: Models, neural mechanisms  
 Attention: Shifting, tracking  
 Attention: Reward  
 Motion: Local, higher order

## Wednesday Morning, May 22

### Banyan Breezeway

Color and Light: Adaptation, constancy, cognition, models  
 Multisensory Processing: Tactile, vestibular  
 Eye Movements: Pursuit, vergence  
 Eye Movements: Models, neural mechanisms

### Pavilion

Visual Search: Eye movements, features, scenes  
 Visual Memory: Attention, cues, search  
 Visual Search: Attention, memory, cues, windows  
 Visual search: Models, neural mechanisms  
 Attention: Neural mechanisms 2

## Abstract Numbering System

Each abstract is assigned a unique 4 or 5 digit number based on when and where it is to be presented. The format of the abstract numbering is DT.RN (where D is the Day, T is the Time, R is the Room and N is the presentation Number).

First Digit - Day	Second Digit - Time	Third Digit - Room	Fourth-Sixth Digits - Number
2 Saturday	1 Early AM talk session	1 Talk Room 1	1, 2, 3... For talks
3 Sunday	2 Late AM talk session	2 Talk Room 2	01, 02... For posters
4 Monday	3 AM poster session	3 Banyan Breezeway	
5 Tuesday	4 Early PM talk session	4 Pavilion	
6 Wednesday	5 Late PM talk session		
	6 PM poster session		

### Examples

21.16 Saturday, early AM talk in Talk Room 1, 6th talk  
 36.313 Sunday, PM poster in Banyan Breezeway, poster board 13  
 53.496 Tuesday, AM poster in the Pavilion, poster board 96

Note: Two digits after the period indicates a talk, three digits indicates a poster (the last two digits are the board number).

# KEN NAKAYAMA MEDAL FOR EXCELLENCE IN VISION SCIENCE

The Vision Sciences Society is honored to present Concetta Morrone with the 2019 Ken Nakayama Medal for Excellence in Vision Science.

The Ken Nakayama Medal is in honor of Professor Ken Nakayama's contributions to the Vision Sciences Society, as well as his innovations and excellence to the domain of vision sciences.

The winner of the Ken Nakayama Medal receives this honor for high-impact work that has made a lasting contribution in vision science in the broadest sense. The nature of this work can be fundamental, clinical or applied.

Dr. Morrone will talk during the Awards Session on Monday, May 20, 2019, 12:30 – 1:45 pm, Talk Room 1-2.

## Concetta Morrone

Professor of Physiology, Department of Translational Research on New Technologies in Medicine and Surgery, University of Pisa



Concetta Morrone graduated with a degree in Physics from the University of Pisa in 1977 and trained in Biophysics at the elite Scuola Normale Superiore from 1973 to 1980. Following research positions at the University of Western Australia, the Scuola Normale Superiore and the CNR Institute of Neuroscience in Pisa, she was appointed Professor of Psycho-

physiology in the Faculty of Psychology at the Università Vita-salute San Raffaele (Milan) in 2000. Since 2008, she has been a Professor of Physiology in the School of Medicine of the University of Pisa. In 2014 Concetta was elected a member of the Accademia dei Lincei, the Italian equivalent of the National Academy of Sciences or the Royal Society of London. In 2014 she was awarded an ERC-IDEA advanced grant, a distinction of excellence in Europe.

The brain architecture underlying our incredibly powerful and versatile visual system is best unravelled using multiple parallel approaches, including development, computational modelling, psychophysics, functional imaging and electrophysiology, in a truly interdisciplinary manner. This is the approach Concetta Morrone has adopted to understand how we segment visual scenes into functional objects, how the visual brain dynamically interacts with the motor system in crucial moments, such as eye-, head- and body-movements, how the brain plastically reorganizes itself for optimal visual processing during development and neuronal diseases. Concetta, in close collaboration with David Burr, has contributed to all these fundamental questions, introducing new concepts and verifying them quantitatively. There are various examples of this approach, including the reorganization of spatio-temporal receptive fields to retune the retinotopy of associative cortex on each saccade to mediate perceptual stability; the reorganization and change of specialization of associative cortex when primary visual pathways are damaged in hemianopia or blind-sight; the dynamic selection of salient spatial features by the Local Energy Model; and how the developing brain controls and calibrates dynamic reorganization and its residual capability in adulthood.





# ELSEVIER/VSS YOUNG INVESTIGATOR AWARD

The Vision Sciences Society is honored to present Talia Konkle with the 2019 Young Investigator Award.

The Young Investigator Award is an award given to an early stage researcher who has already made a significant contribution to our field. The award is sponsored by Elsevier, and the awardee is invited to submit a review paper to *Vision Research* highlighting this contribution.

Dr. Konkle will give a brief talk during the Awards Session on Monday, May 20, 2019, 12:30 – 1:45 pm, Talk Room 1-2.

## Talia Konkle

Assistant Professor Department of Psychology,  
Harvard University



Talia Konkle earned Bachelor degrees in applied mathematics and in cognitive science at the University of California, Berkeley. Under the direction of Aude Oliva, she earned a PhD in Brain & Cognitive Science at MIT in 2011. Following exceptionally productive years as a postdoctoral fellow in the Department of Psychology at Harvard and at the University of Trento, in

2015, Dr. Konkle assumed a faculty position in the Department of Psychology & Center for Brain Science at Harvard.

Dr. Konkle's research to understand how our visual system organizes knowledge of objects, actions, and scenes combines elegant behavioral methods with modern analysis of brain activity and cutting-edge computational theories. Enabled by sheer originality and analytical rigor, she creates and crosses bridges between previously unrelated ideas and paradigms, producing highly cited publications in top journals. One line of research demonstrated that object processing mechanisms relate to the physical size of objects in the world. Pioneering research on massive visual memory, Dr. Konkle also showed that detailed visual long-term memory retrieval is linked more to conceptual than perceptual properties.

Dr. Konkle's productive laboratory is a vibrant training environment, attracting many graduate students and postdoctoral fellows. Dr. Konkle has also been actively involved in outreach activities devoted to promoting women and minorities in science.

### From what things look like to what they are

How do we see and recognize the world around us, and how do our brains organize all of this perceptual input? In this talk I will highlight some of the current research being conducted in my lab, exploring the representation of objects, actions, and scenes in the mind and brain..

## VSS@ARVO 2019

### Vision After Sight Restoration

Monday, April 29, 1:15 – 2:45 pm at ARVO 2019, Vancouver, Canada

Organizers: Lynne Kiorpes, Ulrike Grunert and David Brainard

Speakers: Holly Bridge, Krystel Huxlin, Sharon Gilad-Gutnick and Geoff Boynton

Visual deprivation during development can have a profound effect on adult visual function, with congenital or early acquired blindness representing one extreme regarding the degree of deprivation and adult sight loss representing another. As better treatments for blindness become available, a critical question concerns the nature of vision after the restoration of sight and the level of remaining visual system plasticity. This symposium will highlight recent progress in this area, as well as how vision therapy can best be deployed to optimize the quality of post-restoration vision. This is the biennial VSS@ARVO symposium, featuring speakers from the Vision Sciences Society.

# DAVIDA TELLER AWARD

The Vision Sciences Society is honored to present Dr. Barbara Doshier with the 2019 Davida Teller Award.

VSS established the Davida Teller Award in 2013. Davida was an exceptional scientist, mentor and colleague, who for many years led the field of visual development. The award is therefore given to an outstanding female vision scientist in recognition of her exceptional, lasting contributions to the field of vision science.

Dr. Doshier will speak about her work during the Awards Session on Monday, May 20, 2019, 12:30 – 1:45 pm, Talk Room 1-2.

## Barbara Doshier

Distinguished Professor, University of California, Irvine



Barbara Doshier is a researcher in the areas of visual attention and learning. She received her PhD in 1977 from the University of Oregon and served on the faculty at Columbia University (1977 – 1992) and the University of California, Irvine (1992 – present). Her early career investigated temporal properties of retrieval from long-term and working memory, and priming using

pioneering speed-accuracy tradeoff methods.

She then transitioned to work largely in vision, bringing some of the concepts of cue combination in memory to initiate work on combining cues in visual perception. This was followed by work to develop observer models using external noise methods that went on to be the basis for proposing that changing templates, stimulus amplification, and noise filtering were the primary functions of attention. This and similar work then constrained and motivated new generative network models of visual perceptual learning that have been used to understand the roles of feedback in unsupervised and supervised learning, the induction of bias in perception, and the central contributions of reweighting evidence to a decision in visual learning.

Barbara Doshier is an elected member of the Society for Experimental Psychologists and the National Academy of Sciences, and is a recipient of the Howard Crosby Warren Medal (2013) and the Atkinson Prize (2018).

## Learning and Attention in Visual Perception

Visual perception functions in the context of a dynamic system that is affected by experience and by top-down goals and strategies. Both learning and attention can improve perception that is limited by the noisiness of internal visual processes and noise in the environment. This brief talk will illustrate several examples of how learning and attention can improve how well we see by amplifying relevant stimuli while filtering others—and how important it is to model the coding or transformation of early features in the development of truly generative quantitative models of perceptual performance.

## FABBS Early Career Impact Award

Congratulations to Julie Golomb, the VSS nominee and recipient of the 2019 Federation of Associations in Behavioral & Brain Sciences (FABBS) Early Career Impact Award.



The FABBS Early Career Impact Award honors early career scientists of FABBS member societies during the first 10 years post-PhD and recognizes scientists who have made major contributions to the sciences of mind, brain, and behavior. The goal is to enhance public visibility of these sciences and the particular research through the dissemination efforts of the FABBS in collaboration with the member societies and award winners.

### Julie Golomb

Associate Professor, Ohio State University

Julie Golomb earned her bachelor's degree in neuroscience from Brandeis University and her doctorate from Yale University. She completed post-doctoral research at MIT before joining the faculty at Ohio State in 2012 and receiving tenure in 2018. Her lab's research is funded by grants from the National Institutes of Health, the Alfred P. Sloan Foundation, and the Ohio Supercomputer Center. For more information about Dr. Golomb, see the FABBS website at [www.fabbs.org](http://www.fabbs.org).

# PUBLIC LECTURE

## Peter Thompson

University of York, UK



Following the completion of his doctorate (investigating velocity aftereffects) at the University of Cambridge in 1976, Peter Thompson was awarded a Harkness post-doctoral Fellowship from the Commonwealth Fund to study with Jack Nachmias at the University of Pennsylvania. Returning to England in 1978 he took up a lectureship at the University of York, where he has taught for 40 years.

In 1990 he was awarded a Senior Research Associateship from the U.S National Research Council to work at NASA-Ames Research Center, Moffett Field, CA.

As well as publishing widely on a variety of topics, he has acted as a managing editor of the journal *Perception* for over 20 years and for *i-Perception* since its beginning. His textbook, *Basic Vision*, (written with Tom Troscianko and Bob Snowden) remains a best seller.

In 2006 he was awarded a Vice-Chancellor's teaching Award from the University of York and a National Teaching Fellowship from the English National Education Academy. In 2006 he received the British Psychological Society's Award for Excellence in Psychology Education.

Among many outside interests, Peter enjoys cycling and in 1999 he won a Millennium Fellowship from the Royal Society and the British Association for the Advancement of Science which enabled him to create a scale model of our solar system along a 10km cycle track near York.

Peter has attended every meeting of the Vision Sciences Society since its inception.

## Visual Illusion in the Real World

Sunday, May 19, 2:00 pm, St. Petersburg Main Library, St. Petersburg, Florida

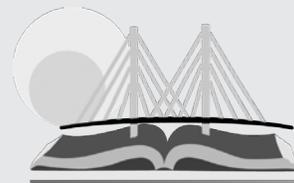
Visual illusions have long perplexed vision scientists and delighted the general public for many years. Most of these illusions are artificially created in the laboratory and while the underlying visual processes that give rise to some illusions are well-understood by scientists, many challenge our existing theories. However visual illusions are not the exclusive reserve of lab-based scientists, indeed we can encounter many of these effects in our everyday lives. This talk will illustrate some of the occasions where what our eyes see conflicts with what we know to be true, even in the 'real' world.

### Attending the Public Lecture

Admission to the Public Lecture is free. The lecture will be held on Sunday, May 19 at 2:00 pm at the St. Petersburg Main Library, 3745 9th Avenue, N. St. Petersburg, FL 33713. The library is a seven mile drive from the TradeWinds Island Grand Resort (see directions).

### About the VSS Public Lecture

The annual public lecture represents the mission and commitment of the Vision Sciences Society to promote progress in understanding vision, and its relation to cognition, action and the brain. Education is basic to our science, and as scientists we are obliged to communicate the results of our work, not only to our professional colleagues but to the broader public. This lecture is part of our effort to give back to the community that supports us.



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**LIBRARY SYSTEM**

ST. PETERSBURG, FLORIDA

# NATIONAL EYE INSTITUTE TRAVEL GRANTS



Grant number R13 EY030356

Congratulations to this year's recipients of the National Eye Institute Travel Grants.

## Early Career Scientist Travel Grants

**Brian Anderson**  
Texas A&M University

**Nancy Carlisle**  
Lehigh University

**Daniel R. Coates**  
University of Houston

**Emily Cooper**  
University of California,  
Berkeley

**Yasmine  
El-Shamayleh**  
Columbia University

**Nicholas Gaspelin**  
Binghamton University

**Sharon Gilad-Gutnick**  
Massachusetts Institute of  
Technology

**Jason Haberman**  
Rhodes College

**Andrew Haun**  
University of Wisconsin -  
Madison

**Biyu He**  
New York University  
Langone Health

**Melissa Kibbe**  
Boston University

**Julie Markant**  
Tulane University

**Ashleigh Maxcey**  
Ohio State University

**Vincent McGinty**  
Rutgers University - Newark

**Abigail Noyce**  
Boston University

**David Osher**  
The Ohio State University

**Megan Peters**  
University of California  
Riverside

**Dobromir Rahnev**  
Georgia Institute of Technology

**Karen Schloss**  
University of Wisconsin -  
Madison

**Viola Stoermer**  
University of California,  
San Diego

**Caglar A Tas**  
University of Tennessee -  
Knoxville

**Brandon Thomas**  
University of Wisconsin -  
Whitewater

**Rachel Wu**  
University of California,  
Riverside

**Bei Xiao**  
American University

## Postdoctoral Travel Grants

**Kirsten Adam**  
University of California  
San Diego

**Stephen Adamo**  
University of Central Florida

**Concetta Alberti**  
Northeastern University

**Reem Alzahabi**  
Tufts University

**Eleonora Bartoli**  
Baylor College of Medicine

**Shlomit Ben-Ami**  
Massachusetts Institute of  
Technology

**Tashauna  
Blankenship**  
Boston University

**Andrew Coia**  
University of Chicago

**Patrick Cox**  
The George Washington  
University

**Rachel Denison**  
New York University

**Kacie Dougherty**  
Vanderbilt University

**Amirhossein Ghaderi**  
York University

**Saeideh Ghahghaei**  
The Smith-Kettlewell Eye  
Research Institute

**Alon Hafri**  
Johns Hopkins University

**Taylor Hayes**  
University of California, Davis

**Shipra Kanjlia**  
Johns Hopkins University

**Ramisha Knight**  
University of Illinois at  
Urbana-Champaign

**Brian Maniscalco**  
University of California,  
Riverside

**J. Patrick Mayo**  
Duke University

**Everett Mettler**  
University of California at  
Los Angeles

**Dina Popovkina**  
University of Washington

**Ramanujan Raghavan**  
New York University

**Arryn Robbins**  
Carthage College

**Zvi Roth**  
National Institute of Mental  
Health, NIH

**Reshane Ruhnau**  
Otto-von-Guericke University

**Noelle Stiles**  
University of Southern  
California

**David Sutterer**  
Vanderbilt University

**Katherine EM Tregillus**  
University of Minnesota

**Stefan Uddenberg**  
Princeton University

**Alex White**  
University of Washington

**John Wilder**  
University of Toronto

**Bo Yeong Won**  
University of California, Davis

**Jacob Yates**  
University of Rochester

**Jennifer Yoon**  
New York University



# ELSEVIER / VISION RESEARCH STUDENT TRAVEL AWARDS

Congratulations to this year's recipients of the Elsevier/*Vision Research* Travel Awards.

**Bianca Baltaretu**

York University and NSERC  
Brain-in-Action Program  
Advisor: J. Douglas Crawford

**Samson Chota**

Université de Toulouse Paul  
Sabatier  
Advisor: Rufin VanRullen

**Clara Colombatto**

Yale University  
Advisors: Brian Scholl

**Cameron Ellis**

Yale University  
Advisor: Nicholas B.  
Turk-Browne

**Jasper Hajonides  
van der Meulen**

University of Oxford  
Advisor: Kia Nobre and Mark  
Stokes

**Rakesh Nanjappa**

SUNY College of Optometry  
Advisor: Robert M. McPeck

**Stella Qian**

Michigan State University  
Advisors: Jan Brascamp

**JohnMark Taylor**

Harvard University  
Advisors: Yaoda Xu

**Matsya Thulasiram**

University of Manitoba  
Advisor: Jonathan Marotta

**Jiaxuan Zhang**

Columbia University  
Advisor: Gemma Roig

**Brandon Carlos**

University of Houston  
Advisor: Benjamin Tamber-  
Rosenau

**Chaipat Chunharas**

University of California, San  
Diego and Chulalongkorn  
University, Thailand  
Advisor: Timothy F. Brady

**Aimee Dollman**

University of Capetown  
Advisor: Mark Solms

**Monika Graumann**

Freie Universität Berlin  
Advisor: Radoslaw Martin Cichy

**Lisa Kroell**

Humboldt-Universität zu Berlin  
Advisor: Martin Rolfs and Paul  
Bays

**Mónica Otero**

Universidad Técnica Federico  
Santa María  
Advisor: María-José Escobar  
and Wael El-Deredy

**Zekun Sun**

Johns Hopkins University  
Advisor: Chaz Firestone

**Chunyue Teng**

George Washington University  
Advisor: Dwight J. Kravitz

**Rina Watanabe**

The University of  
Electro-Communications  
Advisor: Yoichi Miyawaki

**Liron Zipora Gruber**

Weizmann Institute of Science  
Advisor: Ehud Ahissar and  
Shimon Ullman

## Connect with Industry

Tuesday, May 21, 1:00 – 2:30 pm, Sabal/Sawgrass

To reflect the range of interests and career goals of VSS attendees, we are continuing to offer our popular 'Connect with Industry' event.

This is an opportunity for our members to interact with representatives of industry and government agencies. Representatives from Apple, Exponent, NIH, Facebook Reality Labs, VPixx Technologies, and WorldViz will be present to discuss opportunities for vision scientists in their companies and to answer questions about collaborating with, and working within, their organizations.

Two 45-minute sessions will be scheduled (1:00 – 1:45 pm and 1:45 – 2:30 pm). Drop in for one, or stay for both time slots. Representatives will present an introduction to their company/agency at the start of both sessions (1:00 and 1:45 pm).

No sign-ups are required. All VSS attendees are welcome.

Refreshments and snacks will be provided.

# SATELLITE EVENTS

## Computational and Mathematical Models in Vision (MODVIS)

Wednesday, May 15 – Friday, May 17, Horizons

9:00 am - 6:00 pm, Wednesday

9:00 am - 6:00 pm, Thursday

8:30 - 11:45 am, Friday

Organizers: Jeff Mulligan, NASA Ames Research Center; Zygmunt Pizlo, UC Irvine; Anne B. Sereno, Purdue University; and Qasim Zaidi, SUNY College of Optometry

Keynote Selection Committee: Yalda Mohsenzadeh, MIT; Michael Rudd, University of Washington

The 8th VSS satellite workshop on Computational and Mathematical Models in Vision (MODVIS) will be held at the Tradewinds Island Resorts in St. Pete Beach, FL, May 15 – May 17.

A keynote address will be given by Dr. Yanxi Liu, Penn State University.

The early registration fee is \$100 for regular participants, \$50 for students. After March 31st, the registration fee will increase to \$120 (regular) and \$60 (student). More information can be found on the workshop's website: <http://www.conf.purdue.edu/modvis/>

## Improving the Precision of Timing-Critical Research with Visual Displays

Friday, May 17, 9:00 – 11:00 am, Jasmine/Palm

Organizers: Sophie Kenny, VPixx Technologies; Peter April, VPixx Technologies

VPixx Technologies is a privately held company serving the vision research community by developing innovative hardware and software tools for vision scientists ([www.vpixx.com](http://www.vpixx.com)).

Visual display and computer technologies have improved on many fronts over the years; however, impressive technical specifications of devices mask the fact that timing of concurrent events is not typically controlled with a high degree of precision. This is a problem for scientists whose research relies on synchronization of external recording equipment relative to the onset of a visual stimulus. During this workshop, we will demonstrate the use of hardware solutions to improve upon these issues. We will first describe the principle behind these hardware solutions. We will then showcase how experiments can be programmed to control the triggering of external devices, to play audio signals, and to record digital, analog and audio signals, all synchronized with microsecond accuracy to screen refresh.

To help us plan this event, please send an email signalling your interest to: [scientist@vpixx.com](mailto:scientist@vpixx.com).



## Psychophysics Toolbox Forum

Friday, May 17, 11:00 – 11:45 am, Jasmine/Palm

Organizer: Vijay Iyer, MathWorks



MathWorks®

Forum for researchers, vendors, and others who work with the Psychophysics Toolbox

(PTB) widely used for visual stimulus generation in vision science. MathWorks is pleased to support the PTB's ongoing development, which is now hosted at the Medical Innovations Incubator (MII) in Tuebingen. A consortium led by industry is emerging to support the PTB project. Join to learn more about the new arrangement and to provide your input on future directions for PTB.



## Large-Scale Datasets in Visual Neuroscience

Saturday, May 18, 8:30 – 10:30 pm, Jasmine/Palm

Organizers: Elissa Aminoff, Fordham University; John Pyles, Carnegie Mellon University

Speakers: Elissa Aminoff, Fordham University; Kendrick Kay, University of Minnesota; John Pyles, Carnegie Mellon University; Michael Tarr, Carnegie Mellon University

The future of vision science lends itself more and more to using large real-world image datasets ( $n > 1,000$ ) to study and understand the neural and functional mechanisms underlying vision. As the size of such datasets (and the resulting data) increases, there are commensurate challenges to effectively and successfully collect, distribute, and analyze large-scale data. If you are interested in discussing these challenges, please join us.

The format of this event will be brief presentations by researchers who have recently collected or analyzed large fMRI datasets, followed by an open discussion.

## FoVeA (Females of Vision et al) Workshop

Sunday, May 19, 7:30 – 9:00 pm, Horizons

Organizer: Diane Beck, University of Illinois, Urbana-Champaign; Mary A. Peterson, University of Arizona; Karen Schloss, University of Wisconsin – Madison; Allison Sekuler, Baycrest Health Sciences



## Panel Discussion on Navigating Life in Science as a Woman

Panelists: Lynne Kiorpes (New York University), Ruth Rosenholtz (MIT), Preeti Verghese (Smith-Kettlewell Eye Research Institute), Emily Ward (University of Wisconsin – Madison)

The panel will begin by addressing issues they consider important/informative and then address questions.

FoVea is a group founded to advance the visibility, impact, and success of women in vision science ([www.foveavision.org](http://www.foveavision.org)). We encourage vision scientists of all genders to participate in the workshops.

Please register at: <http://www.foveavision.org/vss-workshops>.

## Aesthetics Social

**Monday, May 20, 2:00 – 3:30 pm, Sabal/Sawgrass**

Organizers: Edward Vessel, Max Planck Institute for Empirical Aesthetics; Karen Schloss, University Wisconsin-Madison; Aenne Brielmann (New York University); Ilkay Isik (MPIEA); Dominik Welke (MPIEA)

Our lives are full of aesthetic experiences. When we look at art, people surrounding us, or views out of the window, we cannot help but assess how much the sight pleases us. This social meeting brings together researchers interested in understanding such aesthetic responses. We will highlight aesthetics research being presented at VSS in a "Data Blitz" session, followed by an open discussion and time to socialize. Light refreshments will be offered.

Data Blitz presentations are open to anyone presenting aesthetics-related work at VSS. Selection for presentation will be made by the organizing committee based on scientific rigor, potential impact and interest, academic position (preference given to students/early stage researchers), and whether your work was selected for a talk or poster at VSS (priority given to posters).

This event is sponsored by the International Association of Empirical Aesthetics (IAEA; <https://www.science-of-aesthetics.org>) and the Max Planck Institute for Empirical Aesthetics (MPIEA; <https://www.aesthetics.mpg.de/en.html>).

## A Hands-On Crash Course in Reproducible Mixed-Effects Modeling

**Monday, May 20, 2:00 – 4:00 pm, Glades**

Organizer: Dejan Draschkow, Department of Psychology, Goethe University Frankfurt; Department of Psychiatry, University of Oxford  
Mixed-effects models are a powerful alternative to traditional F1/F2-mixed model/repeated-measure ANOVAs and multiple regressions. Mixed models allow simultaneous estimation of between-subject and between-stimulus variance, deal well with missing data, allow for easy inclusion of covariates and modelling of higher order polynomials. This workshop provides a focused, hands-on and state of the art treatment of applying this analysis technique in an open and reproducible way. We will provide a fully documented R pipeline, solutions for power analysis and will discuss common pitfalls and unresolved issues. It is suitable for 1) "concept attendance" – you want to be able to evaluate potential issues when reviewing a paper; 2) "implementation attendance" – strong theoretical background, low practical experience; 3) "switch attendance" – you are coming from another language or software and want to switch to R; 4) "transition attendance" – you are quite experienced in traditional analysis procedures and want to see what this is all about and 5) "refreshing attendance" – you just want to check if there are any new developments. It might not be suitable for participants with zero experience in statistics and programming and too boring for participants who perform simulation-based power analysis for mixed models or use a PCA to diagnose overfitting problems.

No registration required. First come, first served, until full. For questions or more information, please visit my website at <https://www.draschkow.com/>.

This event is funded by a WikiMedia Open Science grant dedicated to <https://smobsc.readthedocs.io/en/latest/>.

## WorldViz VR/AR Workshop: Virtual Reality Displays Break New Ground for Research Purposes

**Monday, May 20, 2:00 – 4:00 pm, Jasmine/Palm**

Organizer: Matthias Pusch, WorldViz; Lucero Rabaudi, WorldViz

Beyond the wave of consumer virtual reality displays is a new lineup of professional products that are capable of generating a new class of visual stimulus that can be used by scientists. We will show two examples of what we consider most exciting for the VSS community. The first is a multi-resolution HMD that is capable of nearly 60 cycles-per-degree over a large center field of the display which then feathers to more typical HMD resolution toward the periphery. The second is a low-latency high-resolution video-see-thru technology that converts a consumer class HMD into a sophisticated augmented reality system that can be used to combine real near field objects (e.g., one's hands or tools) with computer graphics imagery.

In this Satellite session, we will present these technologies in action with examples of how researchers can use them in practice. There will be a technical portion of the session detailing the technologies benefits and limitations, as well as a hands-on portion for attendees to try the technologies live.

## VISxVISION Workshop: Novel Vision Science Research Directions in Visualization

**Monday, May 20, 2:00 – 4:00 pm, Royal Tern**

Organizer: Cindy Xiong, Northwestern University; Zoya Bylinskii, Adobe Research; Madison Elliott, University of British Columbia; Christie Nothelfer, Nielsen; Danielle Szafir, University of Colorado Boulder

Interdisciplinary work across vision science and data visualization has provided a new lens to advance our understanding of the capabilities and mechanisms of the visual system while simultaneously improving the ways we visualize data. Vision scientists can gain important insights about human perception by studying how people interact with visualized data. Vision science topics, including visual search, ensemble coding, multiple object tracking, color and shape perception, pattern recognition, and saliency, map directly to challenges encountered in visualization research.

VISxVISION ([www.visxvision.com](http://www.visxvision.com)) is an initiative to encourage communication and collaboration between researchers from the vision science and the data visualization research communities. Building on the growing interest on this topic and the discussions inspired by our symposium last year "Vision and Visualization: Inspiring novel research directions in vision science," this workshop aims to provide a platform to bring together vision science and visualization researchers to share cutting-edge research at this interdisciplinary



intersection. We also encourage researchers to share vision science projects that have the potential to be applied to topics in data visualization.

This year's workshop will consist of a series of lightning talks, followed by a Q&A session with the presenters. Attendees will then learn about conference and publication opportunities in this field: Brian Fisher will review the IEEE Vis conference and benefits of collaborating within data visualization, and Editors from the Journal of Vision's upcoming special visualization edition will discuss publishing in this area. The workshop will conclude with a "meet & mingle" session with refreshments, intended to encourage more informal discussion among participants and to inspire interdisciplinary collaboration.

This event is being sponsored by Adobe Inc., the Visual Thinking Lab at Northwestern, and Colorado Boulder's VisuLab.

Please register for the event at: <http://bit.ly/2019visxvision>.

## Canadian Vision Social

**Tuesday, May 21, 12:30 – 2:30 pm, Jasmine/Palm**

Organizer: Doug Crawford, York Centre for Vision Research

This lunch Social is open to any VSS member who is, knows, or would like to meet a Canadian Vision Scientist! This event will feature free food and refreshments, with a complementary beverage for the first 100 attendees. We particularly encourage trainees and scientists who would like to learn about the various opportunities available through York's Vision: Science to Applications (VISTA) program. This event is sponsored by the York Centre for Vision Research and VISTA, which is funded in part by the Canada First Research Excellence Fund (CFREF).

## Visibility: A Gathering of LGBTQ+ Vision Scientists and Friends

**Tuesday, May 21, 8:30 – 10:00 pm (precedes Club Vision), Jasmine/Palm**

Organizer: Alex White, University of Washington; Michael Grubb, Trinity College

LGBTQ students are disproportionately likely to drop out of science early. Potential causes include the lack of visible role models and the absence of a strong community. This social event is one small step towards filling that gap. All are welcome. Snacks, drinks, and camaraderie will be provided. Sponsored by Trinity College.

## MacGyver-ing in Vision Science: Interfacing systems that are not supposed to work together

**Wednesday, May 22, 1:00 – 3:00 pm, Chart**

Organizer: Zoltan Derzsi, New York University Abu Dhabi

In research, it is sometimes necessary to push equipment beyond its design limits or to use it for something it was not designed to do. Desperation leads to creativity, and temporary workarounds end up being permanent. Usually this is the point when a design bottleneck is introduced into the experiment, which will bite back a couple of months later when nobody anticipates it, effectively ruining all the data collected (my own experience!).

This workshop will show some good practices on how to interface various systems, and how to use ordinary electronics in a vision science experiment.

You will get a free IoT (Internet of Things) kit containing a development board, some sensors, a display and light sources.

The kit will contain a nodeMCU device, please make sure you pick it up on the first days of the conference. I will not be able to start from scratch on how to do programming and how to upload a firmware to the board, this will be included in the documentation and there is plenty of support online. I'd like to spend time showing how to make these bits into the cheapest calibrated D65 light source, how to automate data collection over the local network, how to build your own instruments, or simultaneously control various systems, while delivering stimuli with microsecond precision.

You will be able to adapt the workshop material for your own environment, and develop it further.



Join Us Next Year to  
Celebrate the 20th Anniversary  
of the Vision Sciences Society

**VSS 2020**  
**May 15-20, 2020**  
St. Pete Beach, Florida

# FUNDING WORKSHOPS

## VSS Workshop on Funding in the US

No registration required. First come, first served, until full.

Saturday, May 18, 2019, 12:45 – 1:45 pm, Sabal/Sawgrass

Moderator: David Brainard, University of Pennsylvania

Discussants: Todd Horowitz, National Cancer Institute; Lawrence R. Gottlob, National Science Foundation; and Cheri Wiggs, National Eye Institute

You have a great research idea, but you need money to make it happen. You need to write a grant. This workshop will address NIH and NSF funding mechanisms for vision research. Cheri Wiggs (National Eye Institute) and Todd Horowitz (National Cancer Institute) will provide insight into the inner workings of the NIH extramural research program. Larry Gottlob will represent the Social, Behavioral, and Economic (SBE) directorate of the NSF. There will be time for your questions.



### Todd Horowitz

National Cancer Institute  
Todd S. Horowitz, Ph.D., is a Program Director in the Behavioral Research Program's (BRP) Basic Biobehavioral and Psychological Sciences Branch (BBPSB), located in the Division of Cancer Control and Population Sciences (DCCPS) at the National Cancer Institute (NCI). Dr. Horowitz earned his doctorate in Cognitive Psychology at

the University of California, Berkeley in 1995. Prior to joining NCI, he was Assistant Professor of Ophthalmology at Harvard Medical School and Associate Director of the Visual Attention Laboratory at Brigham and Women's Hospital. He has published more than 70 peer-reviewed research papers in vision science and cognitive psychology. His research interests include attention, perception, medical image interpretation, cancer-related cognitive impairments, sleep, and circadian rhythms.



### Cheri Wiggs

National Eye Institute  
Cheri Wiggs, Ph.D., serves as a Program Director at the National Eye Institute (of the National Institutes of Health). She oversees extramural funding through three programs — Perception & Psychophysics, Myopia & Refractive Errors, and Low Vision & Blindness Rehabilitation. She received her PhD from Georgetown University in 1991

and came to the NIH as a researcher in the Laboratory of Brain and Cognition. She made her jump to the administrative side of science in 1998 as a Scientific Review Officer. She currently represents the NEI on several trans-NIH coordinating committees (including BRAIN, Behavioral and Social Sciences Research, Medical Rehabilitation Research) and was appointed to the NEI Director's Audacious Goals Initiative Working Group.



### Lawrence R. Gottlob

National Science Foundation  
Larry Gottlob is a Program Director in the Perception, Action, and Cognition program at the National Science Foundation. His permanent home is in the Psychology Department at the University of Kentucky, but he is on his second rotation at NSF. Larry received his PhD from Arizona State University in

1995 and has worked in visual attention, memory, and cognitive aging.



### David Brainard

University of Pennsylvania  
David H. Brainard is the RRL Professor of Psychology at the University of Pennsylvania. His research interests focus on human color vision, which he studies both experimentally and through computational modeling of visual processing. He is a fellow of the Optical Society, ARVO and the Association for Psychological Science. At

present, he directs Penn's Vision Research Center, serves as Associate Dean for the Natural Sciences in Penn's School of Arts and Sciences, is an Associate Editor of the Journal of Vision, co-editor of the Annual Review of Vision Science, and president-elect of the Vision Sciences Society.

## VSS Workshop on Funding Outside the US

No registration required. First come, first served, until full.

Sunday, May 19, 2019, 12:45 – 1:45 pm, Sabal/Sawgrass

Moderator: Laurie Wilcox, York University, Toronto

Panelists: Thiago Leiros Costa, KU Leuven; Anya Hurlbert, Newcastle University; Concetta Morrone, University of Pisa; and Cong Yu, Peking University

You have a great research idea, but you need money to make it happen. You need to write a grant. This funding workshop will be focused specifically on disseminating information about non-US funding mechanisms appropriate for vision research. The format of the workshop will be a moderated panel discussion driven by audience questions. The panelists are vision scientists, each of whom has experience with at least one non-US funding mechanism. Because funding opportunities are diverse and differ across countries, however, the workshop will also encourage information sharing from the audience.

### Thiago Leiros Costa

KU Leuven



Thiago Leiros Costa is a Marie Skłodowska-Curie fellow at KU Leuven, Belgium. He is currently focused on accessing neural correlates of Gestalt-like phenomena and on the role that predictive processing plays in low and mid-level vision. Being a neuropsychologist and visual neuroscientist, he is interested in basic research in the field of perception per se, but also on opportunities for translational

research in psychology (using tasks and methods derived from basic research to address clinically relevant questions). This has led him to work with different clinical populations, currently focusing on visual predictive processing in Autism. He has experience with multiple techniques, such as psychophysics, EEG, non-invasive brain stimulation and is currently planning his first study using fMRI.



### Anya Hurlbert

Newcastle University

Anya Hurlbert is Professor of Visual Neuroscience, Director of the Centre for Translational Systems Neuroscience and Dean of Advancement at Newcastle University. She co-founded Newcastle's Institute of Neuroscience in 2003, serving as its co-Director until 2014. Hurlbert's research focuses on colour perception and its role in everyday

visual and cognitive tasks, in normal and atypical development and ageing. She is also interested in applied areas such as digital imaging and novel lighting technologies. Professor

Hurlbert is active in the public understanding of science, and has devised and co-curated several science-based art exhibitions, including an interactive installation at the National Gallery, London, for its 2014 summer exhibition Making Colour. She is former Chairman of the Colour Group (GB) and Scientist Trustee of the National Gallery, and currently on the editorial board of *Current Biology* as well as several international advisory boards. Funding for her personal research has come from the Wellcome Trust, UKRI (EPSRC/MRC), the European Commission (EU), charities, and industry. She is currently a PI in the EU H2020 Innovative Training Network "Dynamics in Vision and Touch".



### Concetta Morrone

University of Pisa

Maria Concetta Morrone is Professor of Physiology in the School of Medicine of the University of Pisa, Director of the Vision Laboratory of the IRCCS Fondazione Stella Maris, and Academic Director of the inter-University Masters in Neuroscience. She is a member of the prestigious Accademia dei Lincei and has been awarded

major national and international prizes for scientific achievements. From an initial interest in biophysics and physiology, where she made many seminal contributions, she moved on to psychophysics and visual perception. Over the years her research has spanned spatial vision, development, plasticity, attention, color, motion, robotics, vision during eye movements and more recently multisensory perception and action. She has coordinated many European Community grants over many founding schemes, and was awarded in 2014 an ERC-IDEA Advanced Grant for Excellence in Science.



## Cong Yu

Peking University

Cong Yu is a professor at Peking University. He studies human perceptual learning using psychophysical methods, and macaque visual cortex using two-photon calcium imaging.



## Laurie Wilcox

York University

Laurie M. Wilcox is a Professor in Psychology at York University, Toronto, Canada. She uses psychophysical methods to study stereoscopic depth perception. In addition to basic research in 3D vision, Laurie has been involved in understanding the factors that influence the viewer experience of 3D media (IMAX, Christie Digital) and perceptual

distortions in VR (Qualcomm Canada). Her research has been funded primarily by the Natural Sciences and Engineering Research Council (NSERC) of Canada which supports both basic and applied research programs. She is also familiar with contract-based research in collaboration with industry and government agencies.

## In Memoriam



### Aaron Clarke

Bilkent University, Ankara,  
Turkey  
1977-2018



### Andrea Li

CUNY Queens College  
Unknown-2019



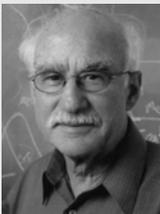
### Robert Fox

Vanderbilt University  
1932-2018



### Jacob (Jack) Nachmias

University of Pennsylvania  
1928-2019



### Barrie Frost

Queen's University  
1932-2018



### J.A.M. (Jan) van Gisbergen

Donders Institute, Radboud  
University  
1943-2019



### Andrei Gorea

CNRS & Université Paris  
Descartes  
1953-2019



### Charles (Charlie) Gross

Princeton University  
1936-2019

# STUDENT AND POSTDOC WORKSHOPS

## Peer-networking for Students and Postdocs

Saturday, May 18, 2019, 12:45 – 1:45 pm, Jasmine/Palm

No registration required. First-come, first-served, until full.

Moderators: Eileen Kowler, Talia Konkle, and Fulvio Domini

Peer-to-peer connections and networks can be the basis of your most important long-term collaborations and friendships. This workshop will help you meet and connect to your peer researchers, face to face. The format will be separate round tables dedicated to different topics, allowing opportunity for discussion and networking. Session moderators will help keep things organized. We'll have at least one rotation during the workshop so you will have the opportunity to talk to more people and explore more topics, including topics you're working on now and areas of interest for the future.



### Eileen Kowler

Rutgers University

Eileen Kowler is a Distinguished Professor at Rutgers University and Senior Associate Dean in the School of Graduate Studies. She received her doctoral degree from the University of Maryland, and was a postdoc at NYU. She has been at Rutgers since 1980, where she maintains affiliations with the Department of Psychology and Center for Cognitive Science. Kowler's research

focuses on the planning of and generation of eye movements and their role in visual tasks. In her roles as a faculty member, VSS board member, and former principal investigator of an NSF training grant, she has a strong commitment to the topic of this workshop: creating opportunities for students and postdocs to develop their careers and collaborate with one another.



### Talia Konkle

Harvard University

Talia Konkle is an Assistant Professor in the Department of Psychology at Harvard University. Her research characterizes mid and high-level visual representation at both cognitive and neural levels. She received her B.A. in Applied Math and Cognitive Science at UC Berkeley in 2004, her Ph.D. from MIT in Brain and Cognitive Science in 2011, and conducted her postdoctoral training at Uni-

versity of Trento and Harvard until 2015. Talia is the recipient of the 2019 Elsevier/VSS Young Investigator Award.



### Fulvio Domini

Brown University

Fulvio Domini is a Professor at the department of Cognitive, Linguistic and Psychological Sciences at Brown University. He was hired at Brown University in 1999 after completing a Ph.D. in Experimental Psychology at the University of Trieste, Italy in 1997. His research team investigates how the human visual system processes 3D visual information to allow successful interactions

with the environment. His approach is to combine computational methods and behavioral studies to understand what are the visual features that establish the mapping between vision and action. His research has been and is currently funded by the National Science Foundation.

## Undergraduate Meet & Greet

Monday, May 20, 2019, 3:30 – 4:30 pm, Banyan/Citrus

Hosts: Laurie Wilcox, York University (VSS Board member) and Nestor Matthews, Denison University (Council for Undergraduate Research, psychology division)

Especially designed for undergrads, the Meet & Greet will take place from 3:30 – 4:30 pm, directly before Meet the Professors. This is the perfect opportunity for undergraduate students to meet current graduate students and postdocs. Discuss continuing your education in the field of vision research, while enjoying a spectacular south-of-the-border salsa bar!

All are welcome!

# How to Spend Your Time Well as a Young Researcher

Sunday, May 19, 2019, 12:45 – 1:45 pm, Jasmine/Palm

No registration required. First-come, first-served, until full.

Moderator: Johan Wagemans, University of Leuven, Belgium

Panelists: Alex Holcombe, Niko Kriegeskorte, Allison Sekuler, and Kate Storrs

Graduate students and postdocs often wonder what they should spend their work time on, in addition to learning the skills of a good researcher, doing good research, and writing good papers. For instance, quite a few people write blogs or are very active on public forums (e.g., about open science, open source software, helpdesks for R, Python, etc.). Others have questions about how much time to spend on service to the profession, such as reviewing manuscripts. With all these choices, many developing researchers will be faced with the challenge of finding the right balance between diversifying their professional activities while still devoting time to the core requirements of their careers. This workshop will feature panelists who will provide perspectives on these issues and lead a discussion on the pros and cons of spending time on professional activities not directly relating to research. If you think you have no time for this, you should definitely be there!



## Alex Holcombe

University of Sydney

When not teaching or working on vision experiments, Alex Holcombe works to improve transparency in and access to research. To address the emerging reproducibility crisis in psychology, in 2011 he co-created PsychFileDrawer.org, in 2013 introduced the Registered Replication Report at the journal *Perspectives on Psychological Science*, and appears in this

cartoon about replication. He was involved in the creation of the journal badges to signal open practices, the preprint server PsyArxiv, the new journal *Advances in Methods and Practices in Psychological Science*, and PsyOA.org, which provides resources for flipping a subscription journal to open access. Talk to him anytime on Twitter @ceptional.



## Niko Kriegeskorte

Columbia University

Nikolaus Kriegeskorte is a computational neuroscientist who studies how our brains enable us to see and understand the world around us. He received his PhD in Cognitive Neuroscience from Maastricht University, held postdoctoral positions at the Center for Magnetic Resonance Research at the University of Minnesota and the U.S. National Institute of Mental Health in Bethesda, and

was a Programme Leader at the U.K. Medical Research Council Cognition and Brain Sciences Unit at the University of Cambridge. Kriegeskorte is a Professor at Columbia University, affiliated with the Departments of Psychology and Neuroscience. He is a Principal Investigator and Director of Cognitive Imaging at the Zuckerman Mind Brain Behavior Institute at Columbia University. Kriegeskorte is a co-founder of the conference "Cognitive Computational Neuroscience," which had its inaugural meeting in September 2017 at Columbia University.



## Allison Sekuler

McMaster University

Allison Sekuler is the Sandra Rotman Chair in Cognitive Neuroscience and Vice-President Research at Baycrest Centre for Geriatric Care. She also is Managing Director of the Centre for Aging + Brain Health Innovation, and the world-renowned Rotman Research Institute. A graduate of Pomona

College (BA, Mathematics and Psychology) and the University of California, Berkeley (PhD, Psychology), she holds faculty appointments at the University of Toronto and McMaster University, where she was the country's first Canada Research Chair in Cognitive Neuroscience and established lasting collaborations with Japanese researchers. Dr. Sekuler has a notable record of scientific achievements in aging, vision science, neural plasticity, imaging, and neurotechnology. Her research focuses on perceptual organization and face perception, motion and depth perception, spatial and pattern vision, and age-related changes in vision. The recipient of numerous awards for research, teaching and leadership, she has broad experience in senior academic, research, and innovation leadership roles, advancing internationalization, interdisciplinarity, skills-development, entrepreneurship, and inclusivity.



## Kate Storrs

Justus-Liebig University, Giessen

Kate Storrs is currently a Humboldt Post-doctoral Fellow using deep learning to study material perception at the Justus-Liebig University in Giessen, Germany. Before that she was a postdoc at the University of Cambridge, a Teaching Fellow at University College London, and a PhD student at the University of Queensland in Australia. Her main professional hobby is science communication.

Kate has performed vision-science-themed stand-up comedy in London at the Royal Society, the Natural History Museum, the Bloomsbury Theatre, and a dozen pubs and festivals across the UK. She has presented vision science segments on Cambridge TV, the Naked Scientists podcast, BBC Cambridgeshire radio, and was a UK finalist in the 2016 FameLab international science communication competition. Always happy to talk on Twitter @katestorrs.



## Johan Wagemans

University of Leuven, Belgium

Johan Wagemans is a professor in experimental psychology at the University of Leuven (KU Leuven) in Belgium. Current research interests are mainly in perceptual grouping, figure-ground organization, depth perception, shape perception, object perception, and scene perception, including applications in autism, arts, and sports (see [www.gestaltrevision.be](http://www.gestaltrevision.be)). He has published

more than 300 peer-reviewed articles on these topics and he has edited the *Oxford Handbook of Perceptual Organization* (2015). In addition to supervising many PhD students and postdocs, he is doing a great deal of community service such as coordinating the Department of Brain & Cognition, being editor of *Cognition*, *Perception*, *i-Perception*, and *Art & Perception*, and organizing the European Conference of Visual Perception (ECVP) and the Visual Science of Art Conference (VSAC) in Leuven (August 2019).

# EXHIBITORS

Exhibits are located in the Pavilion.

## Exhibit Hours

**Saturday, May 18, 9:00 am – 5:30 pm**

**Sunday, May 19, 9:00 am – 5:30 pm**

**Monday, May 20, 9:00 am – 12:30 pm**

**Tuesday, May 21, 9:00 am – 5:30 pm**

## Brain Vision, LLC

### Booth 2

Brain Vision is the leader for EEG in Vision Science. We offer full integration of EEG with many leading eye tracking systems. We provide flexible and robust solutions for high density, active EEG, wireless EEG, dry EEG, and a wide range of bio-sensors like GSR, EKG, Respiration, and EMG. We integrate eye tracking and EEG with other modalities, such as fMRI, TMS, fNIRS, tDCS/HDtDCS, and MEG. If you want to know how EEG improves Vision Science and how eye tracking improves EEG, please talk to us. Let us help you push the edge of what research is possible.

## Cortech Solutions, Inc.

### Booth 8

Cortech Solutions is your source for vision science and functional neuroimaging tools, including high-performance LCD displays, eye-tracking, EEG, fNIRS and TMS for the lab and for the fMRI scanner. We are your US/Canada sales and support contact for Cambridge Research Systems tools for vision science and functional neuroimaging as well as other leading brands from around the world, including Biosemi EEG, Artinis fNIRS, Mag & More TMS, and more. Stop by to see the low-cost / high-performance LiveTrack Lightning eye-tracker, Display++ calibrated LCD display, and more. We intend to exceed your expectations!

## Exponent, Inc.

### Booth 11

Exponent is looking for PhDs, postdocs, and early-career faculty interested in scientific consulting. Exponent's nearly 1,000 employees comprise multidisciplinary teams of largely master's and Ph.D.-level scientists, engineers, physicians, and regulatory consultants across more than 90 disciplines and 26 domestic offices to solve complicated problems facing corporations, insurers, government entities, associations, and individuals.

Our Human Factors practice comprises vision scientists and other cognitive psychologists, who study the safety of products and systems in use. These scientists are engaged in supporting clients in litigation matters or by conducting

custom-designed user research studies. Exponent is home to the 6,000-square-foot Phoenix User Research Center (PURC), which houses six labs, many of which are highly specialized (e.g., optometry lab, motion tracking suite, etc.).

## JÖRVEC

### Booth 9

JÖRVEC is comprised of a team of expert biomedical engineers and neurophysiologists that design and manufacture leading-edge, high-quality instruments for electrophysiological testing in human and experimental models, including flash and pattern ERG and VEP acquisition systems. We look forward to the opportunity to discuss how our instruments can meet your specific needs.

## NeuroNexus

### Booth 10

NeuroNexus powers neuroscience research through innovative neural probes, systems, and data analytics software. NeuroNexus probes include a full line of high-quality, customizable microelectrode arrays for electrophysiology and optogenetics research from rodents to nonhuman primates. NeuroNexus systems provide integrated plug-and-play solutions to support diverse neurophysiology experiments and workflows with up to 512 channels and counting. The NeuroNexus data analytics software platform provides powerful, scalable, cross-platform analytical and visualization tools for managing and analyzing neurophysiological data — from individual experiments to complex multi-investigator 'big data'.

## Oxford University Press

### Booth 1

Visit the Oxford University Press booth to browse our latest online products, journals, and new and classic titles including Perception: A Multisensory Perception, Eyes to See: The Astonishing Variety of Vision in Nature, and The Oxford Handbook of Attention.

## Psychonomic Society

### Booth 13

The Psychonomic Society is the home for scientists who study how the mind works. Members of the Society are cognitive psychologists and include some of the most distinguished researchers in the field. Many of us are concerned with the application of psychology to health, technology and education. Some of the most innovative research uses converging methods such as neuroscience and computational science to achieve our research goals. But what brings us together is that we study the fundamental properties of

how the mind works by using behavioral techniques to better understand mental functioning. Members of the Society perform and promote the basic science of behavior in areas such as memory, learning, problem solving, action planning, language, and perception that connect with other fields of research. Please visit us at [www.psychonomic.org](http://www.psychonomic.org).

## Rogue Research Inc.

### Booths 3 and 4

Rogue Research has been your partner in non-invasive brain stimulation for almost 20 years. We pioneered neuronavigation for TMS with Brainsight and continue this leadership role by developing the most advanced TMS stimulator, the Brainsight cTMS. cTMS offers the ability to manipulate key parameters in the TMS pulse including pulse width and directionality and opens new avenues for stimulation research. Rogue Research also provides tools for basic science including our Brainsight-driven microsurgical robot and deep brain stimulator designed specifically for animal studies. We can also develop custom hardware solutions for your research needs.

## SR Research Ltd.

### Booth 16

SR Research, makers of EyeLink eye-trackers, is proud to announce that all users of Experiment Builder now have native support for EGI NetStation and Brain Products, Brain Vision Recorder. In addition to these network-based protocols BioSemi/ActiveTwo, Neuroscan and other biometric device support nodes have been added. All of this is available for a FREE upgrade for existing licensed Experiment Builder users. Be sure visit the SR Research booth to see the EyeLink Portable Duo – a high performance eye-tracker in a portable package – perfect for school or clinic visits. The EyeLink 1000 Plus continues to provide a uniform, cutting-edge eye-tracking solution for the behavioral lab, infant tracking, non-human primates, MRI, MEG, or EEG. With outstanding technical specifications, portable options, flexible experiment delivery software, and incredible customer support, SR Research enables academics – over 7000 peer-reviewed papers can't be wrong.

## Tucker-Davis Technologies

### Booth 14

Tucker-Davis Technologies (TDT) provides products for basic and applied research in the neurophysiology, hearing, and speech sciences as well as for general data acquisition applications. We offer a complete line of modular DSP-based data acquisition and stimulus generation systems, ranging in complexity from a simple audio stimulator to a complete multichannel sensory and behavioral neurophysiology system for awake, behaving subjects.

Our goal is to offer the most powerful research instrumentation that we can imagine and back it up with the best

customer support in the business. At TDT, our teams work closely to achieve our common goal: to supply you with the highest quality, most up-to-date technology available at an affordable price. We believe we can best meet this goal when all areas of our business work together in a cooperative and collaborative environment. This belief is typified by the integrated nature of our facility, which brings together our team of scientists, on-site laboratory, engineering staff, and manufacturing floor all under one roof.

## VPixx Technologies Inc.

### Booths 5, 6 and 7

VPixx Technologies welcomes the vision community to VSS 2019, and is excited to demonstrate our TRACKPixx 2kHz binocular eye tracker, alongside the PROPixx DLP LED video projector, now supporting refresh rates up to 1440Hz. The PROPixx has been designed specifically for the generation of precise high refresh rate stimuli for gaze-contingent, stereoscopic, and other dynamic applications. The PROPixx is the world's most flexible display for vision research, featuring resolutions up to 1920x1080, and a perfectly linear gamma. The solid state LED light engine has 30x the lifetime of halogen projectors, a wider color gamut, and zero image ghosting for stereo vision applications. Our high speed circular polarizer can project 480Hz stereoscopic stimuli for passive polarizing glasses into MRI and MEG environments. Come and see the SHIELDPixx Faraday cage for installing the PROPixx inside an MRI/MEG room. In addition, the PROPixx includes an embedded data acquisition system, permitting microsecond synchronization between visual stimulation and other types of I/O including eye tracking, EEG, TMS, audio stimulation, button box input, TTL trigger output, analog acquisition, and more! VPixx Technologies will be using the PROPixx/TRACKPixx combination to demonstrate a new set of gaze-contingent paradigms!

## WorldViz

### Booth 12

WorldViz is the industry leader in immersive virtual reality (VR) solutions, with hardware and software deployed across Fortune 500 companies, academic institutions, and government agencies. WorldViz's core software products are Vizard, a specialized development platform for professional VR app development, and Vizable, a simple yet powerful VR creation and collaboration tool that lets people create VR experiences with no programming and then hold collaborative meetings inside of them with people from around the world. On the hardware side, WorldViz makes high-precision, wide-area VR motion tracking systems, gorgeous VR projection systems, and VizBox, a portable VR rig built inside a pelican case.

WorldViz technology enables users to replace physical processes with immersive virtual methods. Applications range from design visualization and industrial training to interactive education, collaboration, and scientific research.

# MEET THE PROFESSORS

**Monday, May 20, 2019, 4:30 – 5:45 pm, Banyan Breezeway**

Students and postdocs are invited to the fourth annual “Meet the Professors” event, Monday afternoon from 4:30 to 5:45 pm, immediately preceding the VSS Dinner and Demo Night. This is an opportunity for a free-wheeling, open-ended discussion with members of the VSS Board and other professors. You might chat about science, the annual meeting, building a career, or whatever comes up.

This year, the event will consist of two 30-minute sessions separated by a 15-minute snack break. Please select a different professor for each session. Space is limited and is assigned on a first-come, first-served basis.

## PROFESSORS AND VSS BOARD MEMBERS

Members of the VSS Board are indicated with an asterisk\*, in case you have a specific interest in talking to a member of the board

**Wendy Adams** University of Southampton, UK – Studies visual and multi-sensory perception of depth and surface properties, and how these are shaped by statistical regularities of the environment.

**Diane Beck** University of Illinois – Studies attention, scene perception, and visual awareness, using both behavioral and cognitive neuroscience methods.

**Monica Castelhana** Queen’s University – Studies scene perception and complex visual information processing in visual search, visual attention, and visual memory.

**Susana Chung** UC Berkeley – Studies spatial vision and eye movements and how visual coding is affected by abnormal visual experience due to eye diseases or amblyopia.

**Miguel Eckstein** UC Santa Barbara – Studies visual search, attention, perceptual learning, eye movements and perception of medical images using psychophysics, computational modeling, neuroimaging and human electrophysiology.

**Patrizia Fattori** University of Bologna, Italy – Studies the neural mechanisms interlacing perception and hand actions in non-human primates and in humans.

**Debbie Giaschi** University of British Columbia, Vancouver – Studies motion perception and binocular vision, using psychophysics and functional MRI, with a special focus on the effects of typical and atypical development in children.

**Eileen Kowler\*** Rutgers University, New Brunswick, NJ – Studies the planning and control of eye movements (saccades and smooth pursuit), with emphasis on the roles of sensory cues and higher level influences, such as prediction, memory and attention.

**Terri Lewis** McMaster University, Hamilton, Canada – Studies the development of vision in normal infants, the con-

sequences of visual deprivation during infancy, and recovery from amblyopia.

**Li Li** New York University Shanghai, Shanghai, PRC – Studies the perception and control of self-motion, and how visuomotor control is affected by expertise training, neuro-degenerative diseases, and drugs.

**Cathy Mondloch** Brock University – Studies face perception and how experience shapes our ability to recognize facial identity and other social cues.

**Alice O’Toole** University of Texas, Dallas – Studies high level visual perception, face recognition, computational models of face recognition, as well as body and person perception.

**Jane Raymond** University of Birmingham, UK – Studies how visual processing priorities are determined by attention, motivation and emotion, both in the lab and in ‘real world’ applied situations.

**Ruth Rosenholtz** Massachusetts Institute of Technology – Studies a range of topics, including peripheral vision, visual search, attention, perceptual organization, and visual clutter, using both behavioral and computational modeling techniques.

**Jennifer Steeves** York University – Studies the long term consequences of losing one eye on visual and auditory processing. She also studies biomarkers of TMS to early visual cortices.

**James Todd** Ohio State University – Uses a combination of psychophysics and computational modeling to study the visual perception of material properties (e.g., glass or metal), the visual perception of 3D shape from various types of optical information (e.g., shading, texture, motion and binocular disparity), and the visual control of motor behavior.

**Johan Wagemans\*** University of Leuven, Belgium – Supervises a research program on perceptual organization (understood broadly, incl. shape, object, and scene perception), using psychophysics, modelling, and neuroimaging, and applying it to autism and visual arts.

**Takeo Watanabe** Brown University – Studies roles of consciousness, attention, reward, aging, sleep and environments in visual perceptual learning and plasticity using brain imaging techniques as well as psychophysics and is a pioneer of decoded online neurofeedback applied to vision and cognition.

**Yaffa Yeshurun** University of Haifa – Studies tradeoffs between the spatial and temporal domains and the way they are affected by attention.

**Cong Yu** Peking University, Beijing – Studies perceptual learning using psychophysical methods and neuronal functions in macaque V1 using two-photon imaging.

\*VSS Board Member

Monday, May 20, 6:00 – 10:00 pm

**Beach BBQ: 6:00 – 8:00 pm, Beachside Sun Decks and limited indoor seating in Banyan Breezeway**

**Demos: 7:00 – 10:00 pm, Talk Room 1-2, Royal Tern, Snowy Egret, Spotted Curlew and Jacaranda Hall**

Please join us Monday evening for the 17th Annual VSS Dinner and Demo Night, a spectacular night of imaginative demos solicited from VSS members. The demos highlight the important role of visual displays in vision research and education. This year's Demo Night will be organized and curated by Gideon Caplovitz, University of Nevada, Reno; Karen Schloss, University of Wisconsin; Gennady Erlikhman, University of Nevada, Reno; and Benjamin Wolfe, MIT.

Demos are free to view for all registered VSS attendees and their families and guests. The Beach BBQ is free for attendees, but YOU MUST WEAR YOUR BADGE to receive dinner. Guests and family members must purchase a VSS Friends and Family Pass to attend the Beach BBQ. You can register your guests at any time at the VSS Registration Desk, located in the Grand Palm Colonnade. Guest passes may also be purchased at the BBQ event, beginning at 5:45 pm.

This year's Demo Night is sponsored by Facebook Reality Labs.

*The following demos will be presented from 7:00 to 10:00 pm, in Talk Room 1-2, Royal Tern, Snowy Egret, Spotted Curlew and Jacaranda Hall:*

## For the Last Time: The Ever-Popular Beuchet Chair

*Peter Thompson, Rob Stone, and Tim Andrews, University of York*

A favorite at demo Night for many years, the Beuchet chair is back for one last hurrah. The two parts of the chair are at different distances and the visual system fails to apply size constancy appropriately. The result is people can be shrunk or made giants.

## Paradoxical impact of memory on color appearance of faces

*Rosa Lafer-Sousa, MIT*

What is the function of color vision? In this demo we impair retinal mechanisms of color using monochromatic sodium light, and probe memory colors for familiar objects in a naturalistic setting. We show a surprising finding: faces, and only faces, provoke a paradoxical memory color, providing evidence that color contributes to face encoding and social communication.

## Immersive and long lasting afterimages – experiences of altered self

*Daw-An Wu, California Institute of Technology*

Dark Adaptation + Bright Flashes = Rod Afterimages!

## Shikaku no Mori: gamified vision tests

*Kenchi Hosokawa, Kazushi Maruya, and Shin'ya Nishida, NTT Communication Science Laboratories*

We gamified several vision tests. Those games can be played in a short time (~ 3 minutes) and with a more entertained way. Test sensitivities are enough to be used as initial screening tests (see pretest data on poster in Sunday Pavilion session). Those games are usable for self-check.

## The UW Virtual Brain Project: Exploring the visual and auditory systems in virtual reality

*Karen B. Schloss, Chris Racey, Simon Smith, Ross Tredinnick, Nathaniel Miller, Melissa Schoenlein, and Bas Rokers, University of Wisconsin – Madison*

The UW Virtual Brain Project allows you to explore the visual system and auditory system in virtual reality. It helps to visualize the flow of information from sensory input to cortex cortical processing. The ultimate aim of the project is to improve neuroscience education by leveraging natural abilities for space-based learning.

## Fun with Birefringent Surfaces and Polarized Light

*Gideon Caplovitz, University of Nevada Reno*

What could possibly go wrong?

## Generating hyper-realistic faces for use in vision science experiments

*Joshua Peterson, Princeton University; Jordan Suchow, Stevens Institute of Technology; Stefan Uddenberg, Princeton University*

Easily alter your photographic appearance in a bunch of interesting ways! We have developed a system to morph any face image along psychologically relevant dimensions using recent advances in deep neural networks (namely GANs).

## Hidden in Plain Sight!

*Peter April, Jean-Francois Hamelin, Danny Michaud, Sophie Kenny, VPixx Technologies*

Can visual information be hidden in plain sight? We use the PROPixx 1440Hz projector, and the TRACKPixx 2kHz eye tracker, to demonstrate images which are invisible until you make a rapid eye movement. We implement retinal stabilization to show other images that fade during fixations. Do your eyes deceive?

## The Magical Alberti Frame

*Niko Troje and Adam Bebko, York University*

Pictures are two things: objects in space and representations of spaces existing elsewhere. In this virtual reality experience, users use a magical frame to capture pictures that momentarily appear identical to the scene they reside in, but when users move, the pictures evoke unexpected and eerie perceptual changes and distortions.

## Café-Wall illusion caused by shadows on a surface of three dimensional object

*Kazushi Maruya, NTT Communication Science Laboratories; Yuki Fujita, Tokyo University of the Arts; Tomoko Ohtani, Tokyo University of the Arts*

Café-Wall illusion is a famous optical illusion that parallel gray lines between displaced rows of black and white squares are appeared to be angled with respect to one another. In this demonstration, we show that the Café-wall pattern can be emerged when shadows are cast by multiple cuboids onto a 3D surface of varying depths.

## Foveal Gravity: A Robust Illusion of Color-Location Misbinding

*Cristina R. Ceja, Nicole L. Jardine, and Steven L. Franconer, Northwestern University*

Here we present a novel, robust color-location misbinding illusion that we call foveal gravity: objects and their features can be perceived accurately, but are often mislocalized to locations closer to fovea under divided attention.

## Multi Person VR walking experience with and without accuracy correction

*Matthias Pusch and Andy Bell, WorldViz*

Consumer VR systems are great fun but they have limited accuracy when it comes to precisely tracking research participants. This demo will allow participants to experience first hand how inaccurate these systems can be in an interactive multi-user setting within a large walkable virtual space.

## Impossible Integration of Size and Weight: The Set-Subset Illusion

*Isabel Won, Steven Gross, and Chaz Firestone, Johns Hopkins University*

Perception can produce experiences that are \*impossible\*, such as a triangle with three 90° sides, or a circular staircase that ascends in every direction. Are there impossible experiences that we can not only see, but also \*feel\*? Here, we demonstrate the "Set-Subset Illusion" — whereby a set of objects can, impossibly, feel lighter than a member of that set!

## The Illusory and Invisible Audiovisual Rabbit Illusions

*Noelle Stiles, University of Southern California; Armand R. Tanguay, Jr., University of Southern California, Caltech; Ishani Ganguly, Caltech; Monica Li, Caltech, University of California, Berkeley; Carmel A. Levitan, Caltech, Occidental College; Yukiyasu Kamitani, Kyoto University; Shinsuke Shimojo, Caltech*

Neuroscience often focuses on the prediction of future perception based on prior perception. However, information is also processed postdictively, such that later stimuli impact percepts of prior stimuli. We will demonstrate that audition can postdictively relocate an illusory flash or suppress a real flash in the Illusory and Invisible Audiovisual Rabbit Illusions.

## Chopsticks Fusion

*Ray Gottlieb, College of Syntonic Optometry*

Have you noticed that your normal stereoscopic perception is never as strong as the stark, solid 3-dimensionality that you see in a stereoscope or virtual reality device? Chopstick Fusion is a simple and inexpensive stereo practice that develops spatial volume perception. I'll bring chopsticks for everyone.

## Moiré effects on real object's appearances

*Takahiro Kawabe and Masataka Sawayama, NTT Communication Science Laboratories; Tamio Hoshik, Sojo University*

An intriguing moiré effect is demonstrated wherein a real bar object in front of stripe motion on an LCD display apparently deforms or rotates in depth. Changing bar orientation and/or a bar-display distance drastically modulates the appearance. Even invisible stripe motion causes a vivid change in bar appearances.

## The motion aftereffect without motion: 1-D, 2-D and 3-D illusory motion from local adaptation to flicker

*Mark Georgeson, Aston University, UK*

Adapting to a flickering image induces vivid illusory motion on an appropriate stationary test pattern: a motion aftereffect without inducing motion. Motion can be seen in 1-D, 2-D or 3-D, depending on the images chosen, but the basis for the effect is local adaptation to temporal gradients of luminance change.

## Monocular rivalry

*Leone Burridge*

An iPhone 5 drawing printed onto paper. The perceived colours fluctuate between blue/yellow and red /green.

## A Fast and blurry versus slow and clear: How stationary stimuli modify motion perception

*Mark Wexler, Laboratoire Psychologie de la Perception, CNRS & Université Paris Descartes*

Why do shooting stars look the way they do? Why do most moving objects look clear, even at saccadic speeds? Are there motion effects waiting to be explored beyond the frequency range of computer monitors? Come and find out!

## Thatcherize your face

*Andre Gouws, York Neuroimaging Centre, University of York; Peter Thompson, University of York*

The Margaret Thatcher illusion is one of the best-loved perceptual phenomena. Here you will have the opportunity to see yourself 'thatcherized' in real time and we print you a copy of the image to take away.

## The caricature effect in data visualization: typical graphs produce negative learning

*Jeremy Wilmer, Wellesley College*

Graphs that display summary statistics without underlying distributions (e.g. bar/line/dot graphs with error bars) are commonly assumed to support robust information transfer. We demo an array of such graphs that falsify this assumption by stimulating negative learning relative to baseline in typical viewers.

## Look where Simon says without delay

*Katia Ripamonti, Cambridge Research Systems; Lloyd Smith, Cortech Solutions*

Can you beat the Simon effect using your eye movements? Compete with other players to determine who can look where Simon says without delay. All you need to do is to control your eye movements before they run off. It sounds so simple and yet so difficult!

## Illusory color induced by colored apparent-motion in the extreme-periphery

*Takashi Suegami, Yamaha Motor Corporation, Caltech; Yusuke Shirai, Toyohashi University of Technology; Sara W. Adams, Caltech; Daw-An J. Wu, Caltech; Mohammad Shehata, Caltech, Toyohashi University of Technology; Shigeki Nakauchi, Toyohashi University of Technology; Shinsuke Shimojo, Caltech, Toyohashi University of Technology*

Our new demo will show that foveal/parafoveal color cue with apparent motion can induce illusory color in the extreme-periphery (approx. 70°-90°) where cone cells are less distributed. One can experience, for example, clear red color perception for extreme-peripheral green flash, with isoluminant red cue (or vice versa).

## The Magical Misdirection of Attention in Time

*Anthony Barnhart, Carthage College*

When we think of "misdirection," we typically think of a magician drawing attention away from a spatial location. However, magicians also misdirect attention in time through the creation of "off-beats," moments of suppressed attention. The "striking vanish" illusion, where a coin disappears when tapped with a pen, exploits this phenomenon.

## How Can (Parts of) Planarians Survive Without their Brains and Eyes? -Hint: Its Extraocular UV-Sensitive System

*Kensuke Shimojo, Chandler School; Eiko Shimojo, California Institute of Technology; Daw-An Wu, California Institute of Technology; Armand R. Tanguay, Jr., California Institute of Technology, University of Southern California; Mohammad Shehata, California Institute of Technology; Shinsuki Simojo, California Institute of Technology*

Planarian dissected body parts, even with incomplete eyespots, show "light avoiding behavior" long before the complete regrowth of the entire body (including the sensory-motor organs). We will demonstrate this phenomenon live (in Petri dishes) and on video under both no-UV (visible) and UV light stimulation. In a dynamic poster mode, we show some observations addressing whether or not the mechanical stress (dissection) switches dominance between the two vision systems.

## The joy of intra-saccadic retinal painting

*Richard Schweitzer, Humboldt-Universität zu Berlin; Tamara Watson, Western Sydney University; John Watson, Humboldt-Universität zu Berlin; Martin Rolfs, Humboldt-Universität zu Berlin*

Is it possible to turn intra-saccadic motion blur – under normal circumstances omitted from conscious perception – into a salient stimulus? With the help of visual persistence, your own eye and/or head movements, and our custom-built setup for high-speed anorthoscopic presentation, you can paint beautiful images and amusing text directly onto your retina.

## Build a camera obscura!

*Ben Balas, North Dakota State University*

Vision begins with the eye, and what better way to understand the eye than to build one? Come make your own camera obscura out of cardboard, tape, and paper, and you can observe basic principles of image formation and pinhole optics.

## The Role of Color Filling-in in Natural Images

*Christopher Tyler and Josh Solomon, City University of London*

We demonstrate that natural images do not look very colorful when their color is restricted to edge transitions. Moreover, purely chromatic images with maximally graded transitions look fully colorful, implying that color filling-in makes no more than a minor contribution to the appearance of extended color regions in natural images.

## Chopsticks trick your fingers

*Songjoo Oh, Seoul National University*

The famous rubber hand illusion is demonstrated by using chopsticks and fingers. A pair of chopsticks simultaneously moves back and forth on your index and middle fingers, respectively. One chopstick is actually touching the middle finger, but the other one is just moving in the air without touching the index finger. If you pay attention only to your index finger, you may erroneously feel the touch come from the index finger, not from the middle finger.

## Spinning reflections on depth from spinning reflections

*Michael Crognale and Alex Richardson, University of Nevada Reno*

A trending novelty toy when spun, induces a striking depth illusion from disparity in specular reflections from point sources. However, "specular" disparity from static curved surfaces is usually discounted or contributes to surface curvature. Motion obscures surface features that compete with depth cues and result in a strong depth illusion.

## High Speed Gaze-Contingent Visual Search

*Kurt Debono and Dan McEchron, SR Research Ltd*

Try to find the target in a visual search array which is continuously being updated based on the location of your gaze. High speed video based eye tracking combined with the latest high speed monitors make for a compelling challenge.

## Interactions between visual movement and position

*Stuart Anstis, University of California, San Diego; Sharif Saleki, Dartmouth College; Mart Ozkan, Dartmouth College; Patrick Cavanagh, York University*

Movement paths can be distorted when they move across an oblique background grating (the Furrow illusion). These motions, viewed the periphery, can be paradoxically immune to visual crowding. Conversely, moving backgrounds can massively distort static flashed targets altering their perceived size, shape, position and orientation.(flash-grab illusion).

## StroboPong

*VSS Staff*

Back by popular demand. Strobe lights and ping pong!

# ATTENDEE RESOURCES

## Abstract Book

A printed Abstract book is no longer provided to each attendee. Printed Abstract books are available for purchase for \$12 at the VSS Registration Desk or can be downloaded in PDF format from the VSS website.

## ATM

An ATM is located in the main lobby of the hotel. A second ATM can be found in the lobby of the Breckenridge Building.

## Audiovisual Equipment for Talks

LCD projectors (e.g., for PowerPoint presentations) will be provided in the talk rooms; however, computers will NOT be provided. Presenters must bring their own computers and set them up BEFORE the start of the session in which they are presenting. We recommend that you test your presentation before your session.

For speakers who did not bring a laptop, there will be a loaner available in the talk room. Please make advance arrangements with Jeff Wilson at the VSS Registration Desk.

## Baggage Check

Bags can be checked with the Bell Hop in the main lobby.

## Business Center

The Business Center is located in the hotel lobby. Computer terminals are available in both the Social Lounge and the Quiet Lounge. A printer is available in the VSS Social Lounge.

## Business Meeting

The VSS Business Meeting is Tuesday, May 21, 12:30 – 1:00 pm in Talk Room 2. All VSS members are encouraged to attend. This is your opportunity to hear about VSS, ask questions, and give feedback.

## Certificates of Attendance

To receive a Certificate of Attendance, please visit the Registration Desk. If you require any changes, we will be happy to email or mail a copy after the meeting.

## Children's Programs/Childcare

### CAMP VSS

New this year, VSS is offering "CAMP VSS," an onsite childcare program especially tailored to the needs of our attendees. CAMP VSS will feature a wide variety of activities for children, ages 6 months to 12 years (separated into age-appropriate groups).

### CAMP VSS Hours

Friday, May 17, 11:30 am – 7:15 pm  
Saturday, May 18, 8:00 am – 8:30 pm  
Sunday, May 19, 8:00 am – 7:30 pm  
Monday, May 20, 8:00 am – 2:15 pm  
Tuesday, May 21, 8:00 am – 7:30 pm  
Wednesday, May 22, 8:00 am – 1:00 pm

CAMP VSS is available for either 1/2-day or full-day sessions. For more information on CAMP VSS, including an overview of activities, a list of rates, and how to register, go to Childcare on the VSS website.

## TradeWinds Kids Activities

Both the TradeWinds Island Grand and Guy Harvey hotels feature a number of activities for children and families. For more information on the kids activities available at the TradeWinds, call the Adventure Center at (727) 363-2294 or check the TradeWinds Island Resorts website at [www.tradewindsresort.com](http://www.tradewindsresort.com).

## Activities Overview

[www.tradewindsresort.com/events-calendar](http://www.tradewindsresort.com/events-calendar)

## Daily Kid's Activities Calendar

[www.tradewindsresort.com/explore/kids-activities](http://www.tradewindsresort.com/explore/kids-activities)

## Code of Conduct

The Vision Sciences Society is committed to providing a safe and professional environment during our annual meeting. All VSS members are expected to conduct themselves in a professional manner. It is unlawful to harass any person or employee because of that person's gender or race. Harassment is prohibited when it creates a hostile or offensive work environment.

## Contact Us

If you need to reach VSS meeting personnel while at the meeting, call extension 7814 from a house phone. From outside the hotel, call (727) 367-6461, extension 7814.

## Copying and Printing

Copy and fax services, as well as general use of printers, is available at the Business Center for a fee. Boarding passes may be printed free of charge. Large format printing for posters is available at the UPS Store, located at 4801 Gulf Blvd, approximately a half mile from the TradeWinds Resort. The UPS Store is open Monday through Friday from 8:00 am – 6:30 pm, and on Saturdays from 9:00 am – 3:00 pm. The UPS Store is closed on Sundays.

A printer is available in the VSS Social Lounge.

## Cyber Lounge

The Cyber Lounge has merged with the Social Lounge this year. Computers terminals are available in both the Social Lounge and the Quiet Lounge. A printer is available in the Social Lounge.

## Disclaimer

The Program Committee reserves the right to change the meeting program at any time without notice. Please note that this program was correct at the time of printing.

## Drink Tickets

Each attendee will receive two "free drink" tickets which may be redeemed at the Opening Night Reception (May 17), Demo Night (May 20), or Club Vision (May 21).

## Exhibits

All exhibits are located in the Pavilion.

### Exhibit Hours

Saturday, May 18, 9:00 am – 5:30 pm  
 Sunday, May 19, 9:00 am – 5:30 pm  
 Monday, May 20, 9:00 am – 12:30 pm  
 Tuesday, May 21, 9:00 am – 5:30 pm

### Exhibitor Setup and Tear down

Setup: Friday, May 17, 4:00 – 7:00 pm  
 and Saturday, May 18, 7:00 – 8:30 am

Tear down: Tuesday, May 21, 5:30 – 7:30 pm

## Fitness Center

The Island Grand fitness center is open daily from 6:00 am – 10:00 pm. The Center is available to attendees staying at either of the TradeWinds hotels. The Guy Harvey Outpost fitness center is open 24/7 with a room key.

## Food Service/Catering

Complimentary coffee and tea, as well as a light continental breakfast is available each morning in the Garden Courtyard and the Pavilion. Coffee, tea, and refreshments will also be served each afternoon between afternoon talk sessions.

Your VSS registration includes a reception and a dinner. The Opening Night Reception is held Friday night and the Demo Night dinner is held Monday night. Both events are held on the beach (weather permitting). Attendees may purchase a Friends & Family Pass, which will allow their guests to attend the food and social events. See Friends & Family Pass for details.

Each attendee will be given two “free drink” tickets, good at the Opening Night Reception, Demo Night, or Club Vision.

The VSS schedule gives a generous two-hour lunch period to take advantage of the beautiful surroundings and amenities of the TradeWinds Island Grand Hotel and the Guy Harvey Outpost.

Note: VSS meeting attendees will receive a 10% discount on all food and beverage purchases in ALL TradeWinds Islands Resorts restaurants and bars. You must present your VSS badge to receive the discount.

The 10% discount does not apply to food or drink at VSS events, such as the Opening Night Reception, Demo Night, and Club Vision or Cash Grab and Go Lunches. Discounted pricing has already been applied to these functions.

### Grab and Go Lunches (cash)

Friday – Sunday, Tuesday 11:30 am – 2:30 pm, Garden Courtyard  
 Monday, 11:30 am – 2:30 pm, Grand Palm Colonnade

## Friends & Family Pass

The VSS Friends & Family Pass will allow your family and friends to enjoy some of our fun VSS social events. For \$50.00, your travel companion can attend the Opening Night Reception and the amazing Demo Night Beach BBQ, as well as enjoy all Coffee/Snack Breaks and the Daily Continental Breakfast. Passes are only \$10.00 for each additional family member.

To purchase a Friends & Family Pass, please visit the VSS Registration desk onsite. Passes will be required for entrance to all social events and meals.

Note: The VSS Friends & Family Pass does not cover entrance to the scientific sessions. For a guest pass to a scientific session, please inquire at the VSS Registration Desk onsite. For more information, please see Guests.

## Guests

Guests are allowed complimentary entry into one VSS session to see the poster or talk of the person they are guests of at the meeting.

Guests must register at the VSS Registration Desk upon arrival and must be accompanied by a VSS attendee. Guests must wear their guest badge for entrance into the session they attend.

To attend social functions, including the Opening Night Reception, Demo Night Beach BBQ, Coffee/Snack Breaks and Daily Continental Breakfast, attendees' guests will need to purchase a Friends & Family Pass, available at the VSS Registration Desk. See Friends & Family Pass.

## Internet Access

VSS provides free wireless internet access in the meeting areas, guest rooms, and VSS lounges. Connect to *twgroup*; password is *group5500*.

If you did not bring your own computer, a limited number of laptop computers with free internet access are available for your use in both the Quiet and Social Lounges.

## Lost and Found

The Lost and found is located at the Registration Desk in the Grand Palm Colonnade.

## Lounges

VSS offers two lounge areas exclusively for meeting attendees:

### Quiet Lounge

The VSS Quiet Lounge is designed especially for attendees who need a quiet place to read, work, silently meditate, or relax. There will be several laptops available. The Quiet Lounge is located in the Glades room in Jacaranda Hall.

Quiet Lounge Hours:

Friday – Sunday, 7:30 am – 9:30 pm  
 Monday, 7:30 am – 12:30 pm  
 Tuesday, 7:30 am – 9:30 pm  
 Wednesday, 7:30 am – 12:45 pm

### Social Lounge

The VSS Social Lounge features comfortable seating for relaxing and visiting with colleagues. There will be several laptops and a printer available, as well as phone charging stations. The Social Lounge is located in the Banyan/Citrus room in Jacaranda Hall.

Social Lounge Hours:

Friday – Sunday, 7:30 am – 9:30 pm  
 Monday, 7:30 am – 12:30 pm  
 Tuesday, 7:30 am – 9:30 pm  
 Wednesday, 7:30 am – 12:45 pm

## Message Center

Messages for registrants can be left and retrieved at the Registration Desk. A bulletin board will be available in the Grand Palm Colonnade for announcements and job postings.

## Moderators

Please arrive at the meeting room 30 minutes prior to the start of your session to allow time for setup and to check in with your speakers. Please see the Moderator Instructions given to you. Copies are available at the VSS Registration Desk.

## Parking

Complimentary self-parking is available to all meeting attendees. Valet parking is available at the TradeWinds Grand Island Resort lobby for an additional fee.

In addition to the parking at the TradeWinds Island Grand, the property directly to the north of the Island Grand has been purchased by the TradeWinds and will be utilized for additional parking. Access is through the Island Grand guard gate.

## Phone Charging Station

Phone charging stations will be located at the VSS Registration Desk and the VSS Social Lounge.

## Photographing/Videotaping Presentations

Unless otherwise noted, photographing and videotaping of posters and talks is permitted at VSS. Presenters who do NOT wish to be photographed or videotaped should indicate this by displaying our "No videos and photos" image on their poster or the title slide at the beginning of their talk. The image can be downloaded from the VSS website or you can pick up a printed version at the Registration Desk.

## Poster Sessions

All poster sessions are held in Banyan Breezeway and the Pavilion. The last three digits of your poster number indicate the number of your poster board.

Posters should be put up at the beginning of a session and taken down at the end. Authors of even numbered posters are expected to be present at their posters during the entire "Even Authors Present" time; and authors of odd numbered posters during the entire "Odd Authors Present" time. Authors may be present longer if desired.

Please be courteous and take down your poster promptly at the end of the session so that the board is empty when the next presenter arrives to put up his or her poster.

Push pins are available for your use and are located in both the Banyan Breezeway and the Pavilion.

## Public Transportation

### Suncoast Beach Trolley

The Suncoast Beach Trolley connects St. Pete Beach with Pass-a-Grill, Treasure Island, Clearwater and other beach communities along the coast. A bus stop is located directly outside the TradeWinds Resort.

Fare: \$2.25/ride or purchase an Unlimited 3-Day Flamingo Fare for \$18.00

### Central Avenue Trolley

The Central Avenue Trolley serves Central Avenue from The Pier in downtown St. Petersburg to Pass-A-Grille on St. Pete Beach.

Fare: multi-zone pricing ranges from free to \$2.25/ride, depending on your destination

## The Downtown Looper

Hop aboard the St. Petersburg Trolley/Downtown Looper route to connect you to all of the city's major museums and attractions. The Looper runs every 15 minutes from 10:00 am – 5:00 pm, and until midnight on Friday and Saturday. Look for the bright red and yellow trolleys.

Fare: \$0.50/ride, seniors & disabled: \$0.25/ride

## Quiet Lounge

See Lounges.

## Registration

The Registration Desk is located in the Grand Palm Colonnade. The Registration Desk is open during the following times:

Friday, May 17, 8:30 am – 6:00 pm

Saturday, May 18, 7:30 am – 6:45 pm

Sunday, May 19, 7:30 am – 6:45 pm

Monday, May 20, 7:45 am – 1:30 pm

Tuesday, May 21, 7:45 am – 6:45 pm

Wednesday, May 22, 7:45 am – 12:45 pm

## Restaurants and Bars at TradeWinds Island Grand

Restaurants may close early without notice.

For help with reservations, please call the Hotel Concierge (8:00 am – 7:00 pm) at 727-363-2274.

### Grab & Go Lunches

The TradeWinds will offer a selection of reasonably-priced lunch items just for VSS attendees, Saturday through Tuesday, 12:00 – 2:30 pm. The Grab & Go Lunches are located in the Garden Courtyard.

### Palm Court Italian Grill

Located in the Courtyard area, the Palm Court features a fine dining experience with an extensive collection of wines, including many by the glass. Guests may eat indoors or under the stars on the courtyard patio. Dinner reservations are suggested.

Lunch: Monday – Saturday, 11:30 am – 2:00 pm

Brunch: Sunday, 10:00 am – 2:00 pm

Dinner: Monday – Saturday, 5:30 – 10:00 pm (closed Sunday)

### Bermudas Steak & Seafood

Bermudas offers a casual setting with a beach view for dinner. Enjoy aged beef, fresh seafood, and regional specialties.

Breakfast: 7:00 – 11:00 am (daily)

Dinner: 5:00 – 10:00 pm (closed Tuesday and Wednesday)

### Beef 'O' Brady's

A casual restaurant and poolside sports pub, Beef 'O' Brady's has a fun atmosphere with salads, burgers, and wraps, as well as tasty desserts and frosty island concoctions. Open daily.

Sunday – Thursday, 11:00 am – 11:00 pm

Friday and Saturday, 11:00 am – midnight

Bar Hours: 11:00 am – 2:00 am

### Flying Bridge

This authentic floating Florida cracker cottage is permanently docked over the meandering Island Grand waterway and features a beachfront deck with a full bar. Dress is casual (many guests dine

in beach attire). The fare includes nachos, wings, salads, burgers, wraps, sandwiches, and grilled entrees. Open daily from 11:00 am – 10:00 pm.

### RedBeard's Sharktooth Tavern

Enjoy nightly live entertainment along with a nice selection of imported bottled beer, full bar, and specialty drinks. Open daily from 4:00 – 11:00 pm (11:00 am – 11:00 pm on Wednesdays and Saturdays). Nightly entertainment is from 8:00 – 9:00 pm. Monday is karaoke night!

### Salty's

Located beside the adult pool, Salty's is a beachfront tiki bar, which features quick sandwiches and burgers, as well as frozen drinks. Open daily.

Food: 11:00 am – 11:00 pm

Cocktails: 11:00 am – 2:00 am

### Room Service at the TradeWinds Island Grand

Available daily from 6:00 am to 11:00 pm.

### Awakenings Lobby Bar

An elegant lobby bar in the afternoon and evenings, Awakenings also offers morning coffee by Starbucks. Opens at 6:30 am. Closing varies daily.

### Pizza Hut Express

Located onsite at the TradeWinds, Pizza Hut Express offers small, medium, and personal pan pizzas, as well as spicy chicken wings. Room delivery is available at the TradeWinds. Open daily from 8:00 am – 10:00 pm (breakfast served 8:00 am – 11:00 am).

### Yoders Ice Cream Shoppe

Featuring gourmet ice cream and decadent sundaes, Yoders is open daily from 11:00 am – 10:00 pm.

### Deli

Located just off the Grand Palm Colonnade, the Deli offers Grab and Go breakfasts, made-to-order sandwiches, salads, snacks and other foods to go. The Deli also features a selection of beverages, including wines. The Deli is open daily from 7:00 am – 2:00 am.

## Restaurants at Guy Harvey Outpost

### Guy Harvey RumFish Grill

Guy Harvey RumFish Grill showcases a 33,500 gallon aquarium, which was featured on Animal Planet's hit series, "Tanked." Dine on cutting edge seafood, explore the various tanks and enjoy nightly

live entertainment with indoor and outdoor bars. Dining hours are 11:30 am – 2:00 pm and 5:00 – 10:00 pm. There is also a Sunday brunch buffet. Reservations are recommended. Bars are open late night.

### Perks Up

Perks Up offers morning pastries, on-the-go breakfast items, and Starbucks coffee. In the afternoon, guests can stop by for ice cream or enjoy a cocktail. Open daily from 7:00 am – 2:00 pm.

### Guys Grill

Enjoy casual all-day dining with outdoor beachfront seating for breakfasts, lunches, and dinners. Open daily 7:00 am – 10:00 pm.

### Sand Bar

The Sand Bar is a beachfront oasis where guests can indulge in tall, cool drinks. Light snacks, appetizers and sandwiches are also served. Open daily from 11:00 am – midnight.

### Room Service at the Guy Harvey Outpost

Available daily from 7:00 am – 10:00 pm.

## Ride Sharing

Ride Sharing is available by logging into your VSS account and selecting "Member Services."

## Shipping

To ship your poster or other items home from the meeting, ask for the Concierge at the front desk of the TradeWinds Island Grand.

## Social Lounge

See Lounges.

## Student Events

Student/Postdoc Workshop: Peer-networking for Students and Postdocs

Saturday, 12:45 – 1:45 pm, Jasmine/Palm

Student/Postdoc Workshop: How to Spend Your Time Well as a Young Researcher

Sunday, 12:45 – 1:45 pm, Jasmine/Palm

Undergrad Meet & Greet

Monday, 3:30 – 4:30 pm, Banyan/Citrus

Meet the Professors

Monday, 4:30 – 5:45 pm, Banyan Breezeway

## Club Vision Dance Party

Tuesday, May 21, 10:00 pm – 2:00 am, Talk Room 1

Club Vision, held on the last night of the meeting, is the final social event of VSS.

Wearing glowing or flashing accessories is a tradition for the party and we will again be distributing free glow-in-the-dark necklaces and bracelets. Feel free to also bring your own creative accessories.

Don't miss the highlight of the VSS social calendar. We'll see you at Club Vision!

# MEMBER-INITIATED SYMPOSIA

## Schedule Overview

Friday, May 17, 2019, 12:00 - 2:00 pm

**S1 Reading as a visual act: Recognition of visual letter symbols in the mind and brain** Talk Room 1

**S2 Rhythms of the brain, rhythms of perception** Talk Room 2

Friday, May 17, 2019, 2:30 - 4:30 pm

**S3 What can be inferred about neural population codes from psychophysical and neuroimaging data?** Talk Room 1

**S4 Visual Search: From youth to old age, from the lab to the world** Talk Room 2

Friday, May 17, 2019, 5:00 - 7:00 pm

**S5 What Deafness Tells Us about the Nature of Vision** Talk Room 1

**S6 Prefrontal cortex in visual perception and recognition** Talk Room 2

## **S1 Reading as a Visual Act: Recognition of Visual Letter Symbols in the Mind and Brain**

Friday, May 17, 2019, 12:00 - 2:00 pm, Talk Room 1

Organizer: Teresa Schubert, Harvard University

Presenters: Teresa Schubert, Alex Holcombe, Kalanit Grill-Spector, Karin James

A great deal of our time as adults is spent reading: Deriving meaning from visual symbols. Our brains, which may have evolved to recognize a lion, now recognize the written word "LION". Without recognizing the letters that comprise a word, we cannot access its meaning or its pronunciation: Letter recognition forms the basis of our ability to read. In this symposium, we will highlight work by a growing number of researchers attempting to bridge the gap in research between vision and language by investigating letter recognition processes, from both a behavioral and brain perspective.

### **How do we recognize letters as visual objects?**

Speaker: Teresa Schubert, Harvard University

Additional Authors: David Rothlein, VA Boston Healthcare System; Brenda Rapp, Johns Hopkins University

### **Implicit reading direction and limited-capacity letter identification**

Speaker: Alex Holcombe, University of Sydney

Additional Authors: David Rothlein, VA Boston Healthcare System; Brenda Rapp, Johns Hopkins University

### **How learning to read affects the function and structure of ventral temporal cortex**

Speaker: Kalanit Grill-Spector, Stanford University

Additional Authors: Marisa Nordt, Stanford University; Vaidehi Natu, Stanford University; Jesse Gomez, Stanford University and UC Berkeley; Brianna Jeska, Stanford University; Michael Barnett, Stanford University

## **Visual experiences during letter production contribute to the development of the neural systems supporting letter perception**

Speaker: Karin James, Indiana University

Additional Authors: Sophia Vinci-Booher, Indiana University

## **S2 Rhythms of the Brain, Rhythms of Perception**

Friday, May 17, 2019, 12:00 - 2:00 pm, Talk Room 2

Organizers: Laura Dugué, Paris Descartes University & Suliann Ben Hamed, Université Claude Bernard Lyon I

Presenters: Suliann Ben Hamed, Niko Busch, Laura Dugue, Ian Fiebelkorn

The phenomenological, continuous, unitary stream of our perceptual experience appears to be an illusion. Accumulating evidence suggests that what we perceive of the world and how we perceive it rises and falls rhythmically at precise temporal frequencies. Brain oscillations -rhythmic neural signals- naturally appear as key neural substrates for these perceptual rhythms. How these brain oscillations condition local neuronal processes, long-range network interactions, and perceptual performance is a central question to visual neuroscience. In this symposium, we will present an overarching review of this question, combining evidence from monkey neural and human EEG recordings, TMS interference studies, and behavioral analyses.

### **The prefrontal attentional spotlight in time and space**

Speaker: Suliann Ben Hamed, Université Claude Bernard Lyon I

### **Neural oscillations, excitability and perceptual decisions**

Speaker: Niko Busch, WWU Münster

### **The rhythms of visual attention**

Speaker: Laura Dugue, Paris Descartes University

### **Rhythmic sampling of the visual environment provides critical flexibility**

Speaker: Ian Fiebelkorn, Princeton University

### S3 What Can Be Inferred About Neural Population Codes from Psychophysical and Neuroimaging Data?

Friday, May 17, 2019, 2:30 - 4:30 pm, Talk Room 1

Organizer: Fabian Soto, Department of Psychology, Florida International University

Presenters: Justin L. Gardner, Rosie Cowell, Kara Emery, Jason Hays, Fabian A. Soto

Vision scientists have long assumed that it is possible to make inferences about neural codes from indirect measures, such as those provided by psychophysics (e.g., thresholds, adaptation effects) and neuroimaging. While this approach has been very useful to understand the nature of visual representation in a variety of areas, it is not always clear under what circumstances and assumptions such inferences are valid. This symposium has the goal of highlighting recent developments in computational modeling that allow us to give clearer answer to such questions.

#### Inverted encoding models reconstruct the model response, not the stimulus

Speaker: Justin L. Gardner, Department of Psychology, Stanford University

Additional Authors: Taosheng Liu, Michigan State University

#### Bayesian modeling of fMRI data to infer modulation of neural tuning functions in visual cortex

Speaker: Rosie Cowell, University of Massachusetts Amherst

Additional Authors: Patrick S. Sadil, University of Massachusetts Amherst; David E. Huber, University of Massachusetts Amherst

#### Inferring neural coding strategies from adaptation aftereffects

Speaker: Kara Emery, University of Nevada Reno

#### What can be inferred about changes in neural population codes from psychophysical threshold studies?

Speaker: Jason Hays, Florida International University

Additional Authors: Fabian A. Soto, Florida International University

#### What can be inferred about invariance of visual representations from fMRI decoding studies?

Speaker: Fabian A. Soto, Florida International University

Additional Authors: Sanjay Narasiwodeyar, Florida International University

### S4 Visual Search: From Youth to Old Age, from the Lab to the World

Friday, May 17, 2019, 2:30 - 4:30 pm, Talk Room 2

Organizer: Beatriz Gil-Gómez de Liaño, Brigham & Women's Hospital-Harvard Medical School and Cambridge University

Presenters: Beatriz Gil-Gómez de Liaño, Iris Wiegand, Martin Eimer, Melissa L-H Vö, Lara García-Delgado, Todd Horowitz

This symposium aims to show how visual search works in children, adults and older age, in realistic settings and environments. We will review what we know about visual search in real and virtual scenes, and its applications to solving global human challenges. Insights of brain processes underlying visual search during life will also be shown. The final objective is to better understand visual search as a whole in the lifespan, and in the real world; and to demonstrate how science can be transferred to society improving human lives, involving children, as well as younger and older adults.

#### Visual Search in children: What we know so far, and new challenges in the real world

Speaker: Beatriz Gil-Gómez de Liaño, Brigham & Women's Hospital-Harvard Medical School and Cambridge University

#### Visual Search in the older age: Understanding cognitive decline

Speaker: Iris Wiegand, Max Planck UCL Center for Computational Psychiatry and Ageing Research

#### Component processes of Visual Search: Insights from neuroscience

Speaker: Martin Eimer, Birkbeck, University of London

#### Visual Search goes real: The challenges of going from the lab to (virtual) reality

Speaker: Melissa L-H Vö, Goethe University Frankfurt

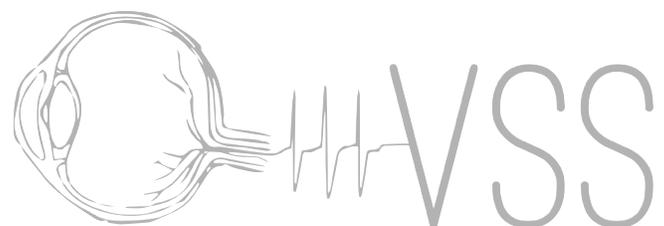
#### Crowdsourcing Visual Search in the real world: Applications to Collaborative Medical Image Diagnosis

Speaker: Lara García-Delgado, Biomedical Image Technologies, Department of Electronic Engineering at Universidad Politécnica de Madrid, and member of Spotlab, Spain

Additional Authors: Miguel Luengo-Oroz, Daniel Cuadrado, & María Postigo, Universidad Politécnica de Madrid & founders of Spotlab

#### Discussant

Speaker: Todd Horowitz, Program Director at the National Cancer Institute. USA



## S5 What Deafness Tells Us About the Nature of Vision

Friday, May 17, 2019, 5:00 - 7:00 pm, Talk Room 1

Organizer: Rain Bosworth, Ph.D., Department of Psychology, University of California, San Diego

Presenters: Matthew Dye, Ph.D., Olivier Pascalis, Ph.D., Rain Bosworth, Ph.D., Fang Jiang, Ph.D., Geo Kartheiser, Ph.D.

It is widely believed that loss of one sense leads to enhancement of the remaining senses – for example, deaf see better and blind hear better. The reality, uncovered by 30 years of research, is more complex, and this complexity provides a fuller picture of the brain's adaptability in the face of atypical sensory experiences. In this symposium, neuroscientists and vision scientists will discuss how sensory, linguistic, and social experiences during early development have lasting effects on perceptual abilities and visuospatial cognition. Presenters offer new findings that provide surprising insights into the neural and behavioral organization of the human visual system.

### Spatial and Temporal Vision in the Absence of Audition

Speaker: Matthew Dye, Ph.D., Rochester Institute of Technology/ National Technical Institute for the Deaf (RIT/NTID)

### What is the Impact of Deafness on Face Perception and Peripheral Visual Field Sensitivity?

Speaker: Olivier Pascalis, Ph.D., Laboratoire de Psychologie et NeuroCognition, CNRS, Grenoble, France

### Psychophysical Assessment of Contrast, Motion, Form, Face, and Shape Perception in Deaf and Hearing People

Speaker: Rain Bosworth, Ph.D., Department of Psychology, University of California, San Diego

### Measuring Visual Motion Processing in Early Deaf Individuals with Frequency Tagging

Speaker: Fang Jiang, Ph.D., Department of Psychology, University of Nevada, Reno, USA

### Neuroplasticity of Spatial Working Memory in Signed Language Processing

Speaker: Geo Kartheiser, Ph.D., NTID Center on Cognition and Language, Rochester Institute of Technology, Rochester, NY, USA

## S6 Prefrontal Cortex in Visual Perception and Recognition

Friday, May 17, 2019, 5:00 - 7:00 pm, Talk Room 2

Organizer(s): Biyu Jade He, NYU Langone Medical Center

Presenters: Diego Mendoza-Halliday, Vincent B. McGinty, Theofanis I Panagiotaropoulos, Hakwan Lau, Moshe Bar

The role of prefrontal cortex (PFC) in vision remains mysterious. While it is well established that PFC neuronal activity reflects visual features, it is commonly thought that such feature encoding in PFC is only for the service of behaviorally relevant functions. However, recent emerging evidence challenges this notion, and instead suggests that the PFC may be integral for visual perception and recognition. This symposium will address these issues from complementary angles, deriving insights from the perspectives of neuronal tuning in nonhuman primates, neuroimaging and lesion studies in humans, recent development in artificial intelligence, and to draw implications for psychiatric disorders.

### Partially-segregated population activity patterns represent perceived and memorized visual features in the lateral prefrontal cortex

Speaker: Diego Mendoza-Halliday, McGovern Institute for Brain Research at MIT, Cambridge MA

Additional Authors: Julio Martinez-Trujillo, Roberts Research Institute, Western University, London, ON, Canada

### Mixed selectivity for visual features and economic value in the primate orbitofrontal cortex

Speaker: Vincent B. McGinty, Rutgers University - Newark, Center for Molecular and Behavioral Neuroscience Rutgers University - Newark, Center for Molecular and Behavioral Neuroscience

### Mapping visual consciousness in the macaque prefrontal cortex

Speaker: Theofanis I Panagiotaropoulos, Neurospin, Paris, France

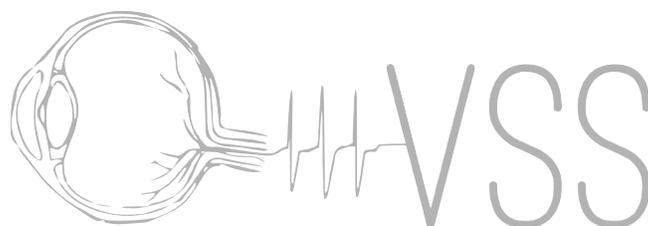
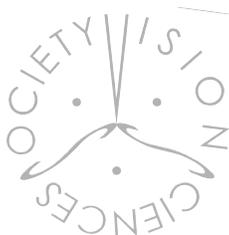
### Persistent confusion on the role of the prefrontal cortex in conscious visual perception

Speaker: Hakwan Lau, UCLA, USA

### What's real? Prefrontal facilitations and distortions

Speaker: Moshe Bar, Bar-Ilan University, Israel

Additional Authors: Shira Baror, Bar-Ilan University, Israel



# SATURDAY MORNING TALKS

## Eye Movements: Perception

Saturday, May 18, 8:15 - 9:45 am, Talk Room 1

Moderator: Doris Braun

21.11, 8:15 am **The Effect of Extended Target Concealment on Motion Extrapolation** Carlene A Horner, Julia E Schroeder, Stephen R Mitroff, Matthew S Cain

21.12, 8:30 am **Eye decide: eye movement initiation relates to decision accuracy in a go/no-go interception task** Jolande Fookien, Miriam Spering

21.13, 8:45 am **Preparing to act: Modulations of visual perception across the foveola associated with microsaccade preparation.** Natalya D Shelchkova, Martina Poletti

21.14, 9:00 am **Resource limitations in transsaccadic integration** Lisa M Kroell, David Aagten-Murphy, Paul M Bays

21.15, 9:15 am **Object identity determines transsaccadic integration** Michael H Herzog, Leila Drissi Daoudi, Haluk Ögmen, Guido Marco Cicchini

21.16, 9:30 am **Face familiarity revealed by oculomotor inhibition on the fringe of awareness** Yoram S Bonneh, Gal Rosenzweig

## 3D Perception

Saturday, May 18, 10:45 am - 12:30 pm, Talk Room 1

Moderator: Jody Culham

22.11, 10:45 am **Does the world look flat? Sustained representation of perspectival shape** Jorge Morales, Chaz Firestone

22.12, 11:00 am **Perceived distance to augmented reality images is influenced by ground-contact** Grant Pointon, Carlos Salas, Haley Adams, Sarah Creem-Regehr, Jeanine Stefanucci, Bobby Bodenheimer, William B Thompson

22.13, 11:15 am **Real-time blur with chromatic aberration drives accommodation and depth perception** Steven A Cholewiak, Peter Shirley, Morgan McGuire, Martin S Banks

22.14, 11:30 am **Which aspects of size and distance for real objects are coded through the hierarchy of visual areas?** Margarita V Maltseva, Derek J Quinlan, Kevin M Stubbs, Talia Konkle, Jody C Culham

22.15, 11:45 am **The size of objects in visual space compared to pictorial space** Adam O Bebko, Nikolaus F Troje

22.16, 12:00 pm **The Intrinsic Constraint Model: A non-Euclidean approach to 3D shape perception from multiple image signals** Jovan T Kemp, Evan Cesanek, Fulvio Domini

22.17, 12:15 pm **Influence of 2D Shape on Contour Depth Perception** Krista A Ehinger, Yiming Qian, Laurie M Wilcox, James H Elder

## Spatial Vision: Crowding, eccentricity, natural image statistics, texture

Saturday, May 18, 8:15 - 9:45 am, Talk Room 2

Moderator: David Whitney

21.21, 8:15 am **The gradient of parafoveal crowding** Daniel R Coates, Dennis M Levi, Ramkumar Sabesan

21.22, 8:30 am **Lost lines in warped space: Evidence for spatial compression in crowded displays** Fazilet Zeynep Yildirim, Daniel R. Coates, Bilge Sayim

21.23, 8:45 am **Inhomogeneous Visual Acuity Correlated With Idiosyncratic Mislocalization** Zixuan Wang, Yuki Murai, David Whitney

21.24, 9:00 am **Using fMRI to link crowding to hV4** Augustin Burchell, Noah C Benson, Jing Y Zhou, Jonathan A Winawer, Denis G Pelli

21.25, 9:15 am **A canonical computational model of cortical area V2** Timothy D Oleskiw, Eero P Simoncelli

21.26, 9:30 am **Extracting image statistics by human and machine observers** Chien-Chung Chen, Hsiao Yuan Lin, Charlie Chubb

## Attention: Animacy, attentional blink

Saturday, May 18, 10:45 am - 12:30 pm, Talk Room 2

Moderator: Yaffa Yeshurun

22.21, 10:45 am **Are familiar rhythms a top-down - bottom-up hybrid cue of visual temporal attention?** Asaf Elbaz, Yaffa Yeshurun

22.22, 11:00 am **Ensemble perception of faces within the focus of attention is biased towards unattended and task-irrelevant faces** Viola S Störmer

22.23, 11:15 am **High-level interference and low-level priming in the Attentional Blink** Daniel Lindh, Ilja Sligte, Kimron Shapiro, Ian Charest

22.24, 11:30 am **Visual search proceeds concurrently during the attentional blink and response selection bottleneck** JongMin Lee, Suk Won Han

22.25, 11:45 am **Do Non-Target Emotional Stimuli Modulate the Attentional Blink?** Lindsay A Santacroce, Nathan Petro, Christopher Walker, Benjamin J Tamber-Rosenau

22.26, 12:00 pm **The Cognitive Architecture of Intentionality Perception: Animacy, Attention and Memory** Ning Tang, Haokui Xu, Chris Baker, Josh Tenenbaum, Tao Gao

22.27, 12:15 pm **Intrinsic curiosity may give rise to animate attention** Julian De Freitas, Kun Ho Kim, Nick Haber, Colin Conwell, George A Alvarez, Daniel L.K. Yamins

# SATURDAY MORNING POSTERS

## Multisensory Processing: Auditory 1

Saturday, May 18, 8:30 am - 12:30 pm, Banyan Breezeway

**23.301 Bayesian causal inference modeling of attentional effects on the temporal binding window of multisensory integration**

Leslie D Kwakye, Victoria Fisher, Margaret Jackson, Oona Jung-Beeman

**23.302 Temporal binding across senses facilitates change detection within senses** Thomas P.F. Schaffhauser, Yves Boubenec, Pascal Mamassian

**23.303 Time Dependence of Predictive and Postdictive Auditory-Visual Processing: The Temporally Extended Audiovisual Rabbit Illusion** Armand R. Tanguay, Jr., Noelle R. B. Stiles, Ishani Ganguly, Shinsuke Shimojo

**23.304 Vision in the extreme-periphery (2): Concurrent auditory stimuli degrade visual detection** Takashi Suegami, Christopher C Berger, Daw-An Wu, Mark Changizi, Shinsuke Shimojo

**23.305 Human sensory dominance is modulated by stimulus temporal uncertainty rather than by spatial uncertainty** Pi-Chun Huang, Yi-Chuan Chen

**23.306 Time-resolved discrimination of audiovisual expressions of emotion in children with and without autism** Kirsty Ainsworth, Federica Falagiarda, Olivier Collignon, Armando Bertone

**23.307 Modality switch effects and the impact of predictability of the sensory environment.** Maria Bianca Amadeo, Michael C. Crosse, Monica Gori, Claudio Campus, John J. Foxe, Sophie Molholm

**23.308 Auditory information facilitates sensory evidence accumulation during visual object recognition** Jamal R Williams, Viola S Störmer

**23.309 Visual-auditory crossmodal priming affects visual texture recognition** Kohta Wakamatsu, Michael J. Proulx, Shigeki Nakauchi

## Faces: Disorders

Saturday, May 18, 8:30 am - 12:30 pm, Banyan Breezeway

**23.310 Development of facial expression recognition following extended blindness: The importance of motion** Sharon Gilad-Gutnick, Grace Kurian, Priti Gupta, Kashish Tiwari, Pragya Shah, Sruti Raja, Shlomit Ben-Ami, Tapan Gandhi, Suma Ganesh, Pawan Sinha

**23.311 Effects of simulated visual impairment on orientation, shape, and emotion perception** Andrea Li, Byron Johnson, Carolyn Ortiz-Wood, Monika Devi, Chayala Friedman, Silvia Calderon, Khalid Barnes, Chananya Stern, Michael Martinez, Brianna Bisogno, Hafsa Khan, Nicole Cavallo

**23.312 Behavioural profiles and neural correlates of higher-level vision after posterior cerebral artery stroke** Grace E Rice, Sheila J Kerry, Ro Julia Robotham, Alex P Leff, Matthew A Lambon Ralph, Randi Starrfelt

**23.313 Face processing in patients with Parkinson's disease and dementia: examined with morphing face discrimination, dynamic emotion recognition, and expression imitation tasks** Wen Reng Mary Ho, Sarina Hui-Lin Chien, Chon-Haw Tsai, Hsien-Yuan Lane

**23.314 Impairment in facial expression perception but normal biological motion perception in a patient with a lesion to right posterior STS** Sharon Gilaie-Dotan, Sarah B Herald, Neta Yitzhak, Hillel Aviezer, Brad Duchaine

**23.315 Evidence for separate processing of facial identity and expression information in an acquired prosopagnosic** Marie-Luise Kieseler, Sarah B Herald, Guo Jiahui, Bradley C Duchaine

**23.316 Congenital Prosopagnosics Show Reduced Configural Effects in an Odd-Man-Out Detection Task** Rafael S Maarek, Emily X Meschke, Irving Biederman

**23.317 Differences in representational geometries of prosopagnosics and neurotypical controls** Mirta Stantic, Michael A Cohen, George A Alvarez

**23.318 Facial gender discrimination in developmental prosopagnosia** Katie L.H. Gray, Jade E. Marsh, Richard Cook

**23.319 The prevalence and nature of face perception impairments in developmental prosopagnosia** Eunmyoung Lee, Maruti Mishra, Anna Stumps, Elyana Saad, Joseph Arizpe, Joseph DeGutis

**23.320 The temporal limits of the face inversion effect in developmental prosopagnosia** Jade E Marsh, Richard Cook, Peter Scarfe, Katie L.H. Gray

**23.321 Developmental prosopagnosics have impaired recollection but intact aspects of familiarity during recognition of newly-learned faces** Anna D Stumps, Elyana Saad, EunMyoung Lee, Joseph Arizpe, Joseph DeGutis

**23.322 Prosopagnosia without object agnosia? A systematic study of a large sample of developmental cases** Tirta Susilo, Hazel K Godfrey

**23.323 Is Grapheme Colour Synesthesia linked to Prosopagnosia?** Thea K Ulimoen, Thomas Alrik Sørensen

**23.324 The neural basis underlying impaired recognition of angry expression in ADHD children measured by near-infrared spectroscopy** Megumi Kobayashi, Masako Nagashima, Tatsuya Tokuda, Takahiro Ikeda, Yukifumi Monden, So Kanazawa, Masami K Yamaguchi, Ryoichi Sakuta, Takanori Yamagata, Ippeita Dan

**23.325 Red background facilitates low spatial frequency fearful face processing in groups with high autistic tendency** Eveline Mu, Laila Hugrass, David P Crewther

**23.326 Slow segmentation of faces in Autism Spectrum Disorder** Carlijn van den Boomen, Johannes J Fahrenfort, Tineke M Snijders, Chantal Kemner

**23.327 Fast periodic visual stimulation EEG reveals reduced social bias in autism** Sofie Vettori, Milena Dzhelyova, Stephanie Van der Donck, Corentin Jacques, Jean Steyaert, Bruno Rossion, Bart Boets

**23.328 Trait anxiety is associated with an enhanced perceptual sensitivity for negative facial expressions.** Li-Chuan Hsu, Yi-Min Tien, Chia-Yao Lin, Ya-Ting Wu

**23.329 The role of attachment style in the holistic perception of expression** Elizabeth C Gregory, Xiaoyi Liu, James W Tanaka

## Perceptual Learning: Models, applications

Saturday, May 18, 8:30 am - 12:30 pm, Banyan Breezeway

**23.330 Transfer of Expertise in Deep Neural Networks** Sumit Binnani, Tejash Desai, Garrison Cottrell

**23.331 Leveling the Field: Comparing the Visual Perception of Stability across Humans and Machines** Colin Conwell, George A Alvarez

**23.332 Evolution of decision weights and eye movements through learning in visual search** Ilmari Kurki, Miguel P Eckstein

- 23.333 **How do regularities bias attention to visual targets?** Ru Qi Yu, Jiaying Zhao
- 23.334 **Does exogenous spatial attention facilitate perceptual learning transfer in acuity and hyperacuity tasks?** Ian Donovan, Angela Shen, Antoine Barbot, Marisa Carrasco
- 23.335 **Trial-by-trial feedback does not improve performance or metacognition in a large-sample perceptual task** Nadia Haddara, Dobromir Rahnev
- 23.336 **Persistent and flexible perceptual training effect in simulated retinal implant vision** Lihui Wang, Fariba Sharifian, Jonathan Napp, Carola Nath, Stefan Pollmann
- 23.337 **Differences in Task-Relevant Perceptual Learning For Older Adults** Ryan V Ringer, Dominic Canare, Jake Ellis, Inga Sogaard, Rui Ni
- 23.338 **Training with simulated lung nodules in X-rays can improve the localization performance of radiology residents** Malerie G McDowell, William R Winter, Edwin F Donnelly, Frank Tong
- 23.339 **Perceptual Learning of Optical Coherence Tomography Image Classification** Evan M Palmer, Elnaz Amiri, Patty Sha, Sophia Yu, Gregory Anderson, Gary C Lee
- 23.340 **Perceptual learning of chest X-ray images** Sha Li, Roger W Remington, Yuhong V Jiang
- 23.341 **Examining Class Dependant Sub-Paths in Deep Neural Networks** Mathew Monfort, Kandan Ramakrishnan, Alex Andonian, Aude Oliva
- 23.342 **Category learning enhances visual perception at the boundary** Sean R O'Bryan, Anto Jude Mohan, Hao Nguyen, Tyler Davis, Miranda Scolari
- 23.343 **Properties of invariant object recognition in human one-shot learning suggests a hierarchical architecture different from deep convolutional neural networks** Yena Han, Gemma Roig, Gad Geiger, Tomaso A Poggio
- 23.344 **Evaluating the performance of the staircase and qCD methods in measuring specificity/transfer of perceptual learning** Pan Zhang, Yukai Zhao, Barbara Doshier, Zhong-Lin Lu
- 23.345 **Generalization of learning in n-AFC orientation identification** Jiajuan Liu, Barbara A. Doshier, Zhong-Lin Lu
- 23.346 **Cholinergic facilitation of visual perceptual learning of texture discrimination** Kelly N Byrne, Michael A Silver
- 23.347 **Different but complementary roles of NREM and REM sleep in facilitation of visual perceptual learning associated with neurotransmitters changes revealed by magnetic resonance spectroscopy.** Masako Tamaki, Zhiyan Wang, Tyler Barnes-Diana, Takashi Yamada, Edward G Walsh, Takeo Watanabe, Yuka Sasaki
- 23.348 **Evidence Supporting Neuro-modulator Release as a Function Perceptual Learning.** Steven R Holloway, José E Náñez, Sr, Michael K McBeath
- 23.349 **Alcoholic drink preferences modulate acquired salience** Kristen L Sanders, Thomas W James
- Object Recognition: Features, parts, reading**  
Saturday, May 18, 8:30 am - 12:30 pm, Banyan Breezeway
- 23.350 **How are spatial relations among object parts represented? Evidence from a shape recall experiment** Thitaporn Chaisilprungraung, Gillian Miller, Michael McCloskey
- 23.351 **Behavioral and Neural Associations between Object Size and Curvature** Caterina Magri, Bria Long, Rocco Chiou, Talia Konkle
- 23.352 **Diagnostic Features for Visual Object Recognition in Humans** Quentin Wohlfarth, Martin Arguin
- 23.353 **The dominance of spatial information in location judgments: A persistent congruency bias even amidst conflicting statistical regularities** Anisha S Babu, Paul S Scotti, Julie D Golomb
- 23.354 **Expectations modulate the time course of information use during object recognition** Laurent Caplette, Greg L West, Frédéric Gosselin
- 23.355 **Impact of Developing Perceptual Expertise on Eye Fixations** Adam H Dickter, Chris I Baker
- 23.356 **The Role of Awareness in Figure-ground Segregation in Human Visual System** Ling Huang, Xilin Zhang
- 23.357 **Stimulus-specific learning facilitates ensemble processing of cars** Oakyoon Cha, Randolph Blake, Isabel Gauthier
- 23.358 **The effect of spatial properties on trypophobia** Kanichi Fukumoto, Mototsugu Hayashi, Kenji Yokoï
- 23.359 **Categorical perception in data visualizations** Caitlyn M McColeman, Steven L Franconeri
- 23.360 **Can we improve the perception of crowded digits with a new font using vertical shifts?** Sofie Beier, Jean-Baptiste Bernard
- 23.361 **Shape features learned for object classification can predict behavioral discrimination of written symbols** Daniel Janini, Talia Konkle
- 23.362 **EEG-based decoding of visual words from perception and imagery** Shouyu Ling, Andy C.H. Lee, Blair C. Armstrong, Adrian Nestor
- 23.363 **Visual Word Recognition as a Means of Addressing Top-Down Feedback** Simon M Kaplan, Chunyue Teng, Dwight J Kravitz
- 23.364 **Effort and Effortlessness in Visual Word Recognition** Adi Shechter, Tami Katzir, David L. Share
- 23.365 **Training peripheral vision to read: is the improvement due to increased temporal processing?** Deyue Yu, Ryan R Loney
- 23.366 **Inter-hemispheric comparison of population receptive fields for visual cortical responses to words** Zhiheng Zhou, Lars Strother
- 23.367 **The spatiotemporal deployment of processing resources in developmental dyslexia** Simon Fortier-St-Pierre, Martin Arguin
- 23.368 **Atypical topography of high-level visual cortex is associated with reading difficulty** Emily Kubota, Jason D Yeatman
- Perceptual Organization: Figure ground, models, neural mechanisms**  
Saturday, May 18, 8:30 am - 12:30 pm, Pavilion
- 23.401 **Exploring perceptual illusions in deep neural networks** Emily J Ward
- 23.402 **Primary Visual Cortex is Active in Response to Stimulation of Phenomenally Blind Areas of the Visual Field in Patients with Cortical Blindness** Colleen L Schneider, Emily K Prentiss, Ania Busza, Kelly Matmati, Nabil Matmati, Zoe R Williams, Bogachan Sahin, Bradford Z Mahon
- 23.403 **Convexity vs. Implied-Closure in Figure-Ground Organization** Tandra Ghose, Ananya Mukherjee
- 23.404 **Impact of the watercolor illusion on figure-ground reversibility** Ralph G Hale
- 23.405 **The Influence of Semantics on Figure Assignment: Unmasked Primes, Masked Primes, and Context** Rachel M Skocypiec, Mary A Peterson
- 23.406 **Further exploration of antagonistic interactions in figure-ground perception** Jaeseon Song, James M Brown

**23.407 Response dependence of reversal-related ERP components in perception of Ambiguous Figures** Diane Abdallah, Joseph Brooks

**23.408 Concentric Bias of Surround Suppression in Early Human Visual Cortex** Juhyoung Ryu, Sang-Hun Lee

**23.409 Dissociable properties of gamma range activity in human early visual cortex when viewing gratings and natural images** Eleonora Bartoli, William Bosking, Ye Li, Michael Beauchamp, Daniel Yoshor, Brett Foster

**23.410 Defining the locus of adaptive changes in visual cortex during associative learning** Maeve R Boylan, Harold A Rocha, Andreas Keil

**23.411 Attenuated brain responses to Gestalts at threshold: differential predictive processing behind Gestalt phenomena?** Thiago L Costa, Andrey R Nikolaev, Cees van Leeuwen, Johan Wagemans

**23.412 Word signs recruit the visual word form area in proficient signers** Jodie Davies-Thompson, Carly Anderson, Douglas EH Hartley, Olivier Collignon

**23.413 What can be inferred about independence and invariance of brain representations from fMRI decoding studies?** Sanjay Narasiwodeyar, Fabian A. Soto

**23.414 Perception of Apparent Motion is Constrained by Geometry, not Physics** Yaxin Liu, Stella F. Lourenco

**23.415 An image computable model of visual shape similarity** Yaniv Morgenstern, Philipp Schmidt, Frieder Hartmann, Henning Tiedemann, Eugen Prokott, Guido Maiello, Roland Fleming

## Visual Memory: Encoding, retrieval

Saturday, May 18, 8:30 am - 12:30 pm, Pavilion

**23.416 An investigation on the influence of prior experience on working memory representations** Diana C Perez, Mary A Peterson

**23.417 Comparing the categorical structure of perceived and recalled images in visual cortex and hippocampus** Wilma A Bainbridge, Elizabeth H Hall, Chris I Baker

**23.418 Temporal Boundary Extension in the Representation of Actions** Gennady Erlikhman, Hongjing Lu

**23.419 More than statistics: Active hypothesis testing during visual learning** Kathryn N Graves, Nicholas B Turk-Browne

**23.420 Encoding context overlap facilitates learning of common structures among similar visual events** Ghoote Kim, Su Keun Jeong, Brice Alan Kuhl

**23.421 Are eye movements beneficial for memory retrieval?** Hikari Kinjo, Jolande Fooker, Miriam Spering

**23.422 Low-level object properties impact memory reconsolidation** Jean-Maxime Larouche, Frederic Gosselin

**23.423 The effect of unprovoked eye movements during visual working memory retention** Carly J. Leonard, Alexander S. Morales

**23.424 Unintentional forgetting is beyond cognitive control** Emma Megla, Bernadette Dezso, Ashleigh M Maxcey

**23.425 Younger and older adults utilize dissociable neural mechanisms to up-regulate encoding of visual long-term memory.** April E Pereira, Caitlin Tozios, Keisuke Fukuda

**23.426 Consolidating Multiple Items Into Visual Working Memory is a Parallel and Remarkably Fast Process** Michael S Pratte, Marshall L Green

**23.427 Is "confirmation bias" always a bad thing?** Cheng Qiu, Long Luu, Alan A Stocker

**23.428 Spatial biases in visual working memory encoding persist despite controlled gaze position** Colin Quirk, Albert Chen, Edward K Vogel

## Spatial Vision: Neural mechanisms

Saturday, May 18, 8:30 am - 12:30 pm, Pavilion

**23.429 Perceived metamorphopsia and orientation discrimination threshold before and after the surgical removal of epiretinal membrane** Ruijing Xia, Binbin Su, Tianyu Chen, Jia Zhou, Hua Bi, Bin Zhang

**23.430 The relation of individual variation in total retinal ganglion cell layer thickness to post-retinal anatomy** Geoffrey K Aguirre, Ritobrato Datta, Min Chen, Kara Cloud, Jessica I. W. Morgan

**23.431 Surface area and cortical magnification of V1, V2, and V3 in a large sample of human observers** Noah C Benson, Davie Yoon, Dylan Forenzo, Stephen A Engel, Jonathan Winawer, Kendrick N Kay

**23.432 Heritability of V1/V2/V3 surface area in the HCP 7T Retinotopy Dataset** Jennifer M Yoon, Noah C Benson, Dylan Forenzo, Jonathan Winawer, Stephen A Engel, Kendrick N Kay

**23.433 A cell population model of retinal ganglion cell layer thickness** Kara N Cloud, Min Chen, Jessica I. W. Morgan, Geoffrey K. Aguirre

**23.434 Comparing Visual Evoked Potentials between Prosthetic Vision, Normal Vision, and Simulated Acuity Reduction** Yingchen He, Jonathon Toft-Nielsen, Susan Sun, Arup Roy, Avi Caspi, Sandra R. Montezuma

**23.435 Estimating the bandwidth of tuned normalization within human visual cortex** Michaela Klimova, Ilona Bloem, Sam Ling

**23.436 Improved methods for decoding sensory uncertainty from activity in the human visual cortex** Ruben S. van Bergen, Janneke F.M. Jehee

**23.437 Population contrast response functions in human visual cortex** Louis N Vinke, Ilona M Bloem, Sam Ling

**23.438 Distinct mechanisms limit contrast sensitivity across retinal eccentricity and polar angle** Antoine Barbot, Jared Abrams, Marisa Carrasco

**23.439 Contrast-dependent spatial frequency selectivity in macaque V1 neurons explained with tuned contrast gain control** Paul G Levy, Eero P Simoncelli, J. Anthony Movshon

**23.440 Normalization by the variance across orientation channels in human V1-V3** Jonathan Winawer, Zeming Fang, Wei Ji Ma

**23.441 Neural correlates of the double-drift illusion** Noah J. Steinberg, Zvi N. Roth, J. Anthony Movshon, Elisha P. Merriam

**23.442 Impaired egocentric spatial representations by congenital deafness: neural evidence from a multimodality neuroimaging study** Hui Li, Xiaolin Zhou, Qi Chen

**23.443 Saliency and the population receptive field model to identify images from brain activity** Alex Hernandez-Garcia, Wietske Zuiderbaan, Akhil Edadan, Serge O. Dumoulin, Peter König

**23.444 The north effect is more pronounced for orientation discrimination than simple detection of spatial frequency gratings.** Leslie Cameron, Michael W Levine, Jennifer E Anderson

**23.445 Differential involvement of EEG oscillations in identity vs. spatial-relation reasoning tasks** Andrea Alamia, Matthew Ricci, Junkyung Kim, Thomas Serre, Rufin VanRullen

**23.446 Sharpening Vision by Adapting to flicker** Derek H Arnold, Eleanor Moses, Melvyn A Goodale

## Attention: Features and objects 1

Saturday, May 18, 8:30 am - 12:30 pm, Pavilion

- 23.447 Feature-based attention resolves differences in target-distractor similarity through multiple mechanisms** Angus F Chapman, Frederik Geweke, Viola S Störmer
- 23.448 Does Global Precedence Occur with Displays of Multiple Hierarchical Objects?** Jong Han Lee, Thomas Sanocki
- 23.449 Feature-specific preparatory signals across the visual hierarchy** Taosheng Liu, Mengyuan Gong
- 23.450 Surface-Object Interactions in Object-Based Attention** Taissa Lytchenko, Genna Erlikhman, Nathan H Heller, Marvin R Maechler, Gideon P Caplovitz
- 23.451 Understanding failures to replicate the influence of grouping cues on the flanker-congruency effect** Cathleen M Moore, Sihon He, J Toby Mordkoff
- 23.452 Semantic Associations Between Scenes and Objects Bias Attention Even When Task-irrelevant** Joseph C Nah, George L Malcolm, Sarah Shomstein
- 23.453 Object-based Attentional Modulation of EEG Alpha is Related to Task Difficulty** Sean L Noah, Travis Powell, Natalia Khodary, Diana Olivan, Mingzhou Ding, George R Mangun
- 23.454 How to create objects with your mind: From object-based attention to attention-based objects** Joan Danielle K Ongchoco, Brian Scholl
- 23.455 Effects of semantic information on task-irrelevant attentional processing** Ellie R Robbins, Andrew J Collegio, Joseph C Nah, Dick Dubbelde, Sarah Shomstein
- 23.456 The binding between representations of own team and self in perceptual matching** Yang Sun, Wei Huang, Haixu Wang, Changhong Liu, Jie Sui
- 23.457 Object-based templates for rejection** Tomoyuki Tanda, Jun Kawahara
- 23.458 Gaze attraction toward higher-order image features generated by deep convolutional neural network** Rina Watanabe, Tomohiro Nishino, Kazuaki Akamatsu, Yoichi Miyawaki
- 23.459 Costs of attentional set-shifting during dynamic foraging, controlled by a novel Unity3D-based integrative experimental toolkit** Marcus R Watson, Benjamin Voloh, Christopher Thomas, Asif Hasan, Thilo Womelsdorf
- 23.460 Averaging is not a coarse processing** Jihong Lee, Sang Chul Chong

## Temporal Processing: Mechanisms

Saturday, May 18, 8:30 am - 12:30 pm, Pavilion

- 23.461 Less Efficient Magnocellular Processing: A Common Deficit in Neurodevelopmental Disorders** Alyse C Brown, Jessica Peters, Carl Parsons, David P Crewther, Sheila G Crewther
- 23.462 Visual discrimination of spatiotemporal average orientation.** Hiromi Sato, Takumi Oide, Ryuto Yashiro, Isamu Motoyoshi
- 23.463 Measuring the Information Content of Visually-Evoked Neuroelectric Activity** Michelle R Greene, David J Field, Bruce C Hansen
- 23.464 Entrainment of brain oscillations persists after the entrainer removal** Mónica Otero, Pavel Prado, Alejandro Weinstein, María-José Escobar, Wael El-Deredy
- 23.465 Behavioural oscillations in subjective timing: the intentional binding effect modulates over time** Huihui Zhang, David Alais

- 23.466 Dissociable effects of attention and expectation on perceptual decision making** Nuttida Rungratsameetaweean, Sirawaj Itthipuripat, John T. Serences
- 23.467 cTBS to V1 alters GABA and Glx** Karlene Stoby, Sara Rafique, Georg Oeltzschner, Jennifer Steeves
- 23.468 Occipital Alpha-TMS causally modulates Temporal Order Judgements: Evidence for discrete temporal windows in vision** Samson Chota, Phillipe Marque, Rufin VanRullen
- 23.469 An EEG investigation of tactile duration adaptation** Baolin Li, Lihan Chen, Jianrong Jia
- 23.470 fMRI signatures of perceptual echoes in early visual cortex** Canhuang Luo, Sasskia Brüers, Isabelle Berry, Rufin VanRullen, Leila Reddy
- 23.471 Predictive coding reduces metabolic costs** Blake W Saurels, Derek H Arnold



# SATURDAY AFTERNOON TALKS

## Perception and Action: Locomotion, wayfinding

Saturday, May 18, 2:30 - 4:15 pm, Talk Room 1

Moderator: Jeffrey Saunders

24.11, 2:30 pm **Modeling Gaze and Foothold Selection in Outdoor Walking** Dawei Liang, Ruohan Zhang, Jonathan S. Matthis, Karl S. Muller, Edison Thomaz, Dana H. Ballard, Mary M. Hayhoe

24.12, 2:45 pm **The Embodied Semantic Fovea - real-time understanding of what and how we look at things in-the-wild** Aldo A Faisal, John A Harston, Chaiyawan Auepanwiriyakul, Mickey Li, Pavel Orlov

24.13, 3:00 pm **Effects of head and body orientation on center bias and serial dependence in heading perception** Qi Sun, Li Li

24.14, 3:15 pm **Predicting driving impairment from visual and oculomotor impairment after alcohol intake** Jing Chen, Yinghua Yang, Rui Jin, Leland S Stone, Li Li

24.15, 3:30 pm **The relative rate of optical expansion controls speed in 1D pedestrian following** Jiuyang Bai, William H Warren

24.16, 3:45 pm **Collective Decision Making in Human Crowds: Majority Rule Emerges From Local Averaging** Trenton D Wirth, William H Warren

24.17, 4:00 pm **Updating Perception and Action Across Real-World Viewpoint Changes** Andrew Clement, James R Brockmole

## Faces: Neural mechanisms

Saturday, May 18, 5:15 - 6:45 pm, Talk Room 1

Moderator: Isabelle Buelthoff

25.11, 5:15 pm **Strong face selectivity in the fusiform can develop in the absence of visual experience** N Apurva Ratan Murty, Santani Teng, David Beeler, Anna Mynick, Aude Oliva, Nancy Kanwisher

25.12, 5:30 pm **Differential white matter connections to ventral and lateral occipito-temporal face-selective regions underlie differences in visual field coverage** Dawn Finzi, Jesse Gomez, Vaidehi Natu, Brianna Jeska, Michael Barnett, Kalanit Grill-Spector

25.13, 5:45 pm **Decoding the Viewpoint and Identity of Faces and Bodies** Celia Foster, Mintao Zhao, Timo Bolkart, Michael J Black, Andreas Bartels, Isabelle Bülthoff

25.14, 6:00 pm **Distinct spatiotemporal profiles for identity, expression, gender, and gaze information during face perception from intracranial EEG recordings** Brett B Bankson, Michael J Ward, R. Mark Richardson, Avniel S Ghuman

25.15, 6:15 pm **Mapping face- and house-selectivity in ventral occipito-temporal cortex with intracerebral potentials.** Simen Hagen, Corentin Jacques, Louis Maillard, Sophie Colnat-Coulbois, Bruno Rossion, Jacques Jonas

25.16, 6:30 pm **Seeing (social) relations: human visual specialization for dyadic interactions** Liuba Papeo

## Attention: Shifting, tracking

Saturday, May 18, 2:30 - 4:15 pm, Talk Room 2

Moderator: Brian Anderson

24.21, 2:30 pm **Hemifield-specific information is exchanged as targets move between the hemifields** Roger W Strong, George A Alvarez

24.22, 2:45 pm **Assessing the Competition Between Location-Based Selection History and Explicit Goals** Nick Gaspelin, Travis N. Talcott, Steven J. Luck

24.23, 3:00 pm **Distinguishing Between Punishment vs Negative Reinforcement in the Control of Attention** Brian A Anderson, Haena Kim, Mark K Britton, Andy J Kim

24.24, 3:15 pm **A delay in sampling information from temporally autocorrelated visual stimuli** Chloe Callahan-Flintoft, Alex O Holcombe, Brad Wyble

24.25, 3:30 pm **Unlike saccades, quick phases of optokinetic nystagmus (OKN) are not preceded by shifts of attention** Nina M Hanning, Heiner Deubel

24.26, 3:45 pm **Eye tracking supports active attentional suppression from negative templates** Nancy B Carlisle, Ziyao Zhang

24.27, 4:00 pm **Tracking the item in focus of attention in working memory through pupilometry** Nahid Zokaei, Alexander Board, Sanjay Manohar, Anna C Nobre

## Development

Saturday, May 18, 5:15 - 6:45 pm, Talk Room 2

Moderator: Laura Emberson

25.21, 5:15 pm **Top-down perception at 6 months of age: Evidence from motion perception** Naiqi G Xiao, Lauren L Emberson

25.22, 5:30 pm **Decoding the contents of the developing visual system with fMRI in awake infants** Cameron T Ellis, Lena J Skalaban, Tristan S Yates, Vikranth R Bejjanki, Javier S Turek, Nicholas B Turk-Browne

25.23, 5:45 pm **Brain damage and early visuospatial problems: a structure-function coupling in very preterm born children** Maud M van Gils, Jeroen Dudink, Irwin KM Reiss, Johannes van der Steen, Johan JM Pel, Marlou JG Kooiker

25.24, 6:00 pm **Is higher susceptibility to attentional deficits in children related to lower susceptibility to Inattentional Blindness in visual search** Beatriz Gil-Gómez de Liaño, Elena Pérez-Hernández, María Quirós-Godoy, Jeremy M Wolfe

25.25, 6:15 pm **A Rare Visuospatial Disorder** Aimee K Dollman, Mark L Solms

25.26, 6:30 pm **Quantified visuospatial attention & motion processing in very preterm born children from 1y to 2y corrected age is related to neurodevelopmental outcome** Marlou JG Kooiker, Maud M van Gils, Irwin KM Reiss, Johannes van der Steen, Johan JM Pel

# SATURDAY AFTERNOON POSTERS

## Object Recognition: Categories, models, neural mechanisms

Saturday, May 18, 2:45 - 6:45 pm, Banyan Breezeway

**26.301 Distinguishing the effects of object-scene association strength and real-world object size in scene priming** Wei Chen, Olivia S. Cheung

**26.302 Does Semantic Activation Affect Human Object Detection in Natural Scenes?** Colin S Flowers, Rachel M Skocypec, Mary A Peterson

**26.303 Sexualization leads to the visual processing of bodies as objects** Ruth M Hofrichter, M.D. Rutherford

**26.304 Adults prefer to look at real objects more than photos** Jody C Culham, Stephanie M. Schumacher, Derek J. Quinlan, Kevin M. Stubbs, Judy Basmaji, Cosette L. Leblanc, Romy E. Segall, Valentina Parma

**26.305 Generating visual stimuli that vary in recognisability** Kevin H Roberts, Alan Kingstone, Rebecca M Todd

**26.306 Here's a novel object: draw variants from the same class.** Henning Tiedemann, Yaniv Morgenstern, Philipp Schmidt, Roland W Fleming

**26.307 Taking a machine's perspective: Humans can decipher adversarial images** Zhenglong Zhou, Chaz Firestone

**26.308 Developmental changes in the ability to draw distinctive features of object categories** Bria L Long, Judith E Fan, Zixian Chai, Michael C Frank

**26.309 Reliability-based arbitration between noise and event-based component of observers' internal model during perceptual decision making** Jozsef Fiser, Adam Koblinger, Jozsef Arato

**26.310 Everyday hallucinations?: Strong expectations lead to the misperception of faces in visual noise** Reshanne R Reeder, Johannes Salge

**26.311 Learning to generalize like humans using basic-level object labels** Joshua C Peterson, Paul Soulos, Aida Nematzadeh, Thomas L Griffiths

**26.312 Neural Dynamics of Category Representations Across Space and Time in the Ventral Visual Cortex** Yalda Mohsenzadeh, Caitlin Mullin, Benjamin Lahner, Aude Oliva

**26.313 The "A Day in the Life" Project: A Preliminary Report** Jenny Hamer, Celene Gonzalez, Garrison W Cottrell

**26.314 Relating category-selective regions in biological and artificial neural networks** Jacob S Prince, Talia Konkle

**26.315 A cognitively-aligned representational space for DNNs** Kandan Ramakrishnan, Yalda Mohsenzadeh, Mathew Monfort, Aude Oliva

**26.316 The time course of novel visual object recognition.** Martin Arguin, Justine Massé

## Binocular Vision: Rivalry, suppression

Saturday, May 18, 2:45 - 6:45 pm, Banyan Breezeway

**26.317 Pupillometry and Microsaccade Responses Reveal Unconscious Processing of Face Information Under Interocular Suppression** Yung-Hao Yang, Hsin-I Liao, Shimpei Yamagishi, Shigeto Furukawa

**26.318 Underlying mechanisms of temporal dynamics in bistable perception** Yijun Ge, Ruanyuan Zhang, Chencan Qian, Chen Chen, Juraj Mesik, Stephen Engel, Sheng He

**26.319 Bi-stable perception as a bridge between vision and decision making** Jan Brascamp, Amanda L McGowan, Matthew B Pontifex

**26.320 Pre-stimulus connectivity patterns predict perception at binocular rivalry onset** Elie Rassi, Andreas Wutz, Nicholas Peatfield, Nathan Weisz

**26.321 Lateralized occipitotemporal tDCS modulates dynamics of binocular rivalry between faces and words** Linan Shi, Zhouyuan Sun, Geoffrey F. Woodman, Peng Zhang, Sheng He

**26.322 Parameter dependence of first and subsequent percepts in visual tri-stability** Thomas G.G. Wegner, Jan Grenzebach, Alexandra Bendixen, Wolfgang Einhäuser

**26.323 Natural-scene-based SSVEPs revealed effects of short-term monocular deprivation** Lili Lu, Sheng He, Yi Jiang, Stephen A Engel, Min Bao

**26.324 Homeostatic control of interocular balance revealed with contrast mismatch** Daniel Y Tso, Ronald A Miller

**26.325 Re-balancing the eyes using monocularly-directed attention** Sandy Wong, Alex Baldwin, Kathy Mullen, Robert Hess

**26.326 Unconscious meridional rivalry in oblique astigmatism** Gad Serero, Maria Lev, Uri Polat

**26.327 Novel Procedure for Generating Continuous Flash Suppression: Seurat Meets Mondrian** Randolph Blake, Oakyoon Cha, Gaeun Son, Sang Chul Chong

**26.328 A Signal Detection Analysis of Nonconscious Perception of Orientation with Continuous Flash Suppression** Ali Pournagh-dali, Bennett L. Schwartz

**26.329 V1 Laminar Activation during Binocular Rivalry Flash Suppression** Brock M Carlson, Michele A Cox, Kacie Dogherty, Alexander Maier

**26.330 Using pattern classification and EEG to reveal the temporal characteristics of categorical processing during interocular suppression** Dustin Cox, Edward Ester, Sang Wook Hong, Yosun Yoon

**26.331 Multi-center mapping of human ocular dominance columns with BOLD fMRI** Gilles de Hollander, Wietske van der Zwaag, Chencan Qiang, Peng Zhang, Tomas Knäpen

**26.332 Depth Estimates in Half Occlusions in Natural Scenes** David N White, Johannes Burge

## Spatial Vision: Crowding, eccentricity

Saturday, May 18, 2:45 - 6:45 pm, Banyan Breezeway

**26.333 Pre-saccadic isotropization of crowding zones** Mehmet N Agaoglu, Drew J Wodecki, Susana T L Chung

**26.334 Offline transcranial direct current stimulation (tDCS) can improve the ability to perceive crowded targets** Guanpeng Chen, Ziyun Zhu, Fang Fang

**26.335 Spatio-Temporal Dependencies of Letter Feature Processing** Susana T.L. Chung, Daniel R Coates

**26.336 Visual crowding disrupts the cortical representation of letters in early visual areas** Hojin Jang, Frank Tong

**26.337 Two eyes are not better than one with crowded targets** Maria Lev, Jian Ding, Uri Polat, Dennis Levi

26.338 **The occurrence of illusory conjunctions correlates with the spatial noise in peripheral vision** Yuri A. Markov, Lilith G. Dulyan, Ruth Rosenholtz, Igor S. Utochkin

26.339 **Direct capture of peripheral appearance reveals what is lost and retained in peripheral vision** Natalia Melnik, Daniel R. Coates, Bilge Sayim

26.340 **The cost of using several crowding units to recognize a complex object** Denis G Pelli, Darshan Thapa

26.341 **When detrimental crowding becomes beneficial uniformity in peripheral letter recognition** Koen Rummens, Bilge Sayim

26.342 **Differences and similarities between temporal crowding, spatial crowding and masking** Yaffa Yeshurun, Shira Tkacz-Domb

26.343 **Humans trust central vision more in the light and the dark** Alejandro H. Gioriani, Alexander C. Schütz

26.344 **Radial-tangential anisotropy of bisection thresholds in the normal periphery** Robert J Green, Susana T L Chung

26.345 **Under-confidence in peripheral vision** Matteo Toscani, Karl R Gegenfurtner, Pascal Mamassian, Matteo Valsecchi

26.346 **Vision in the extreme-periphery (1b): perception of rotation rate** Daw-An Wu, Takashi Suegami, Shinsuke Shimojo

26.347 **Exploring the effects of gaze-contingent rendering on reading performance** Angelica Godinez, Rachel Albert, David Leubke

26.348 **Perceptual factors in mental maze solving** Dian Yu, Qian-qian Wan, Benjamin Balas, Ruth Rosenholtz

## Color and Light: Psychophysics, neural mechanisms

Saturday, May 18, 2:45 - 6:45 pm, Banyan Breezeway

26.349 **A Quadratic Model of the fMRI BOLD Response to Chromatic Modulations in V1** Michael A Barnett, Geoffrey K Aguirre, David H Brainard

26.350 **fMRI responses to foveal versus peripheral chromatic and achromatic stimuli** Erin Goddard, Kathy T Mullen

26.351 **Cortically-stimulating gratings reveal non-cardinal colors better than do LGN-stimulating spots** Karen L Gunther, Colby Dunigan, Carson Powell, Jorge Rodriguez

26.352 **Hue selective masking: an SSVEP study** Sae Kaneko, Ichiro Kuriki, Søren K Andersen

26.353 **The effect of emotion on neural representations of color.** Yelim Lee, Daehyun Kim, Won Mok Shim

26.354 **Similarities in response non-linearities in macaque lateral prefrontal cortex visual neurons during in vivo and in vitro experiments. Implications for normalization models.** Julio C Martinez-Trujillo, Eric S Kuebler, Michelle Jimenez, Jackson Blonde, Kelly Bullock, Megan Roussy, Benjamin Corrigan, Roberto Gulli, Diego Mendoza-Halliday, Santiago Gomez-Torres, Stefan Everling, Julia Sunstrum, Meagan Wiederman, Michelle Everest, Wataru Inoue, Michael Poulter

26.355 **Decoding chromaticity and luminance information with multivariate EEG** David W Sutterer, Andrew Coia, Vincent Sun, Steven Shevell, Edward Awh

26.356 **Dynamic of ON and OFF chromatic adaptation** Clemente Paz-Filgueira, Michael R. Tan, Dingcai Cao

26.357 **Luminance and chromatic contrast sensitivity at high light levels** Sophie Wuergler, Rafal Mantiuk, Maria Perez-Ortiz, Jasna Martinovic

26.358 **Comparison of three methods for determining equiluminance** Jingyi He, Yesenia Taveras Cruz, Rhea T Eskew

26.359 **Spectral Luminance Filtration's Effect on Color Contrast Sensitivity in Color Normal and Color Deficient Observers** Johnathan W Hoopes, Patricia M Cisarik

26.360 **Blue light effects on the gap effect** Hsing-Hao Lee, Su-Ling Yeh

26.361 **Minimum (motion) measurements of human color matching functions** Alex J Richardson, Kassandra R Lee, Eric Walowitz, Michael A Crognale, Michael A Webster

26.362 **Vision in the extreme-periphery (3a): color perception is induced by foveal input** Mohammad Shehata, Takashi Suegami, Yusuke Shirai, Daw-An Wu, Shigeki Nakauchi, Shinsuke Shimojo

26.363 **Vision in the extreme-periphery (3b): effects of eccentricity and foveal input on color perception** Yusuke Shirai, Takashi Suegami, Mohammad Shehata, Shinsuke Shimojo, Shigeki Nakauchi

26.364 **McCollough world: A novel induction method for orientation-contingent color aftereffects** Katherine E.M. Tregillus, Yanjun Li, Stephen A Engel

26.365 **White Illusion: Effects of Inducer Contrast, Test-Bar Location, and Test-Bar Contrast** Bruno Breitmeyer, Richard W. Plummer, Ralph Hale, James M. Brown

26.366 **Adaptation to melanopic stimulation does not affect cone-mediated flicker sensitivity** Joris Vincent, Geoffrey K Aguirre, David H Brainard

26.367 **The Potential Contribution of Melanopsin to Steady-State Electroretinogram and VEP Responses** Michael R Tan, Clemente Paz-Filgueira, Dingcai Cao

26.368 **Differential Effects of Low-Dose Alcohol versus Acute Sleep Deprivation on Light-Evoked Pupil Response Dynamics** Terence L. Tyson, Nathan H. Feick, Patrick F. Cravalho, Erin E. Flynn-Evans, Leland S. Stone

## Visual Memory: Working memory, individual differences

Saturday, May 18, 2:45 - 6:45 pm, Pavilion

26.401 **Detrimental Effects of Effortful Physical Action on Cognitive Control in Younger and Older Adults** Lilian Azer, Weizhen Xie, Hyung-Bum Park, Weiwei Zhang

26.402 **The association between visual working and long-term memory across normal ageing** Giedre Cepukaityte, Nahid Zokaei, Anna C. Nobre

26.403 **What and where: The influence of attention on visual short-term memory for item and spatial location information, and the relationship to autism traits.** Dana A Hayward, Jelena Ristic

26.404 **Memory capacity meets expertise: increased capacity for abnormal images in expert radiologists** Hayden Schill, Jeremy M Wolfe, Timothy F Brady

26.405 **The importance of distinguishing between subjective and objective guessing in visual working memory** Timothy F Brady, Mark W Schurgin, John T Wixted

26.406 **Capacity Limits on Visual Imagination** Cristina R Ceja, Steven L Franconeri

26.407 **Did I guess that? Event-related potentials reveal no differences in error-monitoring following correct responses and forced guesses in a visual working memory task.** Elizabeth M Clancy, Naseem Al-Aidroos

26.408 **The content of visual working memory regulates the priority to access visual awareness, including bound memoranda with multiple features** Yun Ding, Andre Sahakian, Chris L. E. Paffen, Marnix Naber, Stefan Van der Stigchel

**26.409 Probing The Functional Relationship Between Visual Working Memory and Conflict Resolution Processes** Melissa E Moss, Atsushi Kikumoto, Jena Z Kunimune, Ulrich Mayr

**26.410 Unconscious working memory outside the focus of attention** Marjan Persuh, Alexander Rue

**26.411 Does Lying Require More or Less Visual Working Memory and What Does It Mean for the Legal System?** Christopher S Sundby, Geoffrey F Woodman

## Visual Memory: Contents, capacity

Saturday, May 18, 2:45 - 6:45 pm, Pavilion

**26.412 Neural evidence reveals two types of rotations in visual working memory during a mental rotation task** Maya Ankaoua, Roy Luria

**26.413 Spatial working memory representations are resistant to an intervening stimulus and behavioral task** Grace E. Hallenbeck, Thomas C. Sprague, Masih Rahmati, Kartik K. Sreenivasan, Clayton E. Curtis

**26.414 Representing the spatiotemporal structure of visual events: Spatial and temporal frames of reference in working memory** Anna Heuer, Martin Rolfs

**26.415 A Big Data Approach to Revealing the Nature of Carryover Effects** Michelle R Kramer, Patrick H Cox, Stephen R Mitroff, Dwight J Kravitz

**26.416 High-fidelity visual features form complex objects in memory** Aedan Y Li, Keisuke Fukuda, Morgan D Barens

**26.417 What can half a million change detection trials tell us about visual working memory?** Roy Luria, Keisuke Fukuda, Haleyl Balaban

**26.418 Working memory distraction resistance depends on prioritization** Remington Mallett, Jarrod A Lewis-Peacock

**26.419 Flexible reprioritization of information in visual working memory** Paige Pytel, Edward F Ester

**26.420 Relational Interactions between Visual Memory Representations Increase with Maintenance Duration** Paul S Scotti, Yoolim Hong, Andrew B Leber, Julie D Golomb

**26.421 Clustering based on multiple features in visual working memory** Gaeun Son, Sang Chul Chong

**26.422 Working memory resources can be efficiently deallocated from items that become obsolete** Robert Taylor, Paul M Bays

**26.423 Evidence for the world as an external memory: A trade-off between internal and external visual memory storage** Stefan Van der Stigchel, Martijn Schut, Rosyl Somai

## Spatial Vision: Models

Saturday, May 18, 2:45 - 6:45 pm, Pavilion

**26.424 The spatiotemporal dynamic of attention in normal reading** Augustin Achouline

**26.425 Spatial memory biases reflect encoding precision and not categorical perception** Thomas A Langlois, Nori Jacoby, Jordan W Suchow, Thomas L Griffiths

**26.426 Sensitivity to global form in the presence of noise is stimuli dependent** Mahesh Raj Joshi, Anita J Simmers, Seong T Jeon

**26.427 Lateral modulation of orientation discrimination of center-surround sinusoidal stimuli in peripheral vision** Yih-Shiuan Lin, Chien-Chung Chen, Mark W. Greenlee

**26.428 The Alignment of Systemic Low Frequency Oscillations with V1 Retinotopic Organization** Ezgi I Yucel, Noah C Benson, Yunjie Tong, Blaise Frederick, Ione Fine, Ariel Rokem

**26.429 A divisive model of midget and parasol ganglion cells explains the contrast sensitivity function** Heiko H Schütt, Felix A Wichmann

**26.430 Probing blur adaptation with reverse correlation** Keith A May, William H McIlhagga

**26.431 Effects of Target Amplitude Uncertainty, Background Contrast Uncertainty, and Prior Probability Are Predicted by the Normalized Template-Matching Observer** Can Oluk, Wilson S Geisler

**26.432 Using dynamic contrast estimation to assess interocular summation for non-rivalrous stimuli** Kimberly Meier, Kristina Kristina Tarczy-Hornoch, Ione Fine, Geoffrey M Boynton

## Visual Memory: Models, mechanisms

Saturday, May 18, 2:45 - 6:45 pm, Pavilion

**26.433 Hierarchical Bayesian Modeling for Testing Representational Shift in Visual Working Memory** Hyung-Bum Park, Weiwei Zhang

**26.434 Neural resource model explains visual working memory performance in whole-report tasks** Sebastian Schneegans, Paul M Bays

**26.435 I will never forget you: Direct forgetting and the 3-state model of visual working memory.** Samantha N Spitzer, Melissa R Beck

**26.436 Simultaneous Retrospective Prioritization of Multiple Working Memory Representations** Ashley DiPuma, Kelly Rivera, Edward Ester

**26.437 The asymmetric mixed-category advantage in visual working memory: a domain-general, not domain-specific account** Nurit Gronau, Rotem Avital-Cohen

**26.438 Visual working memory representations during a change detection task persist in long-term memory** Praveen K Kenderla, Melissa M Kibbe

**26.439 Spatial working memory and visual working memory share common storage resources** Zeyu Li, Zhi Li

**26.440 Visual Working Memory Directly Alters Perception** Chunyue Teng, Dwight J Kravitz

**26.441 Retroactive interference demonstrates a flexible relationship between dual-task demands and the temporal dynamics of visual working memory consolidation** Brandon J Carlos, Benjamin J Tamber-Rosenau

**26.442 Unambiguous evidence in favor of a signal detection model of visual working memory** Mark W Schurgin, John T Wixted, Timothy F Brady

**26.443 Attraction and Response Probe Similarity Effects in a Multiple Ensemble Judgment Task** Cindy Xiong, Cristina R Ceja, Casimir Ludwig, Steven Franconeri

**26.444 I won't forget that: Partial forgetting in visual working memory is not due to binding errors.** Katherine C Moen, Melissa R Beck

**26.445 Neural evidence for a dissociation between the pointer system and the representations of visual working memory** Haleyl Balaban, Trafton Drew, Roy Luria

## Eye Movements: Saccades

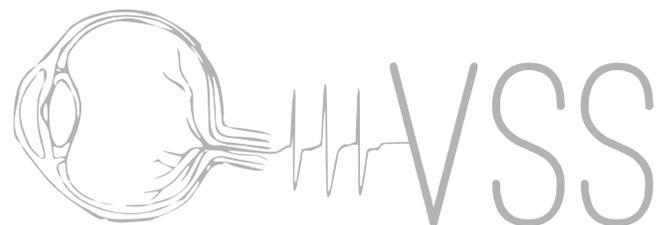
Saturday, May 18, 2:45 - 6:45 pm, Pavilion

- 26.446 **Rapid and robust online saccade detection** Richard Schweitzer, Martin Rolfs
- 26.447 **Competition of salience and informational value in saccadic adaptation** Alexander C Schütz, Ilja Wagner, Christian Wolf
- 26.448 **Saccadic adaptation driven by attentional selection in visual working memory** Ilja Wagner, Christian Wolf, Alexander C. Schütz
- 26.449 **Alternating Between Stimulus-Driven and Minimally-Delayed Prosaccades: Switch-Costs Manifest via Response Suppression** Benjamin Tari, Mohammed Fadel, Matthew Heath
- 26.450 **Online perturbations of illusory size and actual size affect saccades with the same time course** Zhongting Chen, Pin Yang, Jing Chen
- 26.451 **Dynamic interplay of position- and velocity signals during interceptive saccades in monkeys and humans** Jan Churan, Alexander Goettker, Doris I. Braun, Karl R. Gegenfurtner, Frank Bremmer
- 26.452 **From Gaussian Blobs to Natural Scenes: Comparable results for saccade-pursuit interactions across stimuli of different complexity** Alexander Goettker, Ioannis Agtzidis, Doris I Braun, Michael Dorr, Karl R Gegenfurtner
- 26.453 **The Spatiotemporal Influences of Bottom-up Input on double-step Saccade Planning** Shane Kelly, Matt S Peterson, Wilsaan M Joiner
- 26.454 **Pre-saccadic enhancement and suppression as continuous shifts in spatial information weighting** Frederik Geweke, Martin Rolfs
- 26.455 **Effects of saccades and contrast steps on visual sensitivity** Zhetuo Zhao, Giorgio Merli, Michele Rucci
- 26.456 **Mental Model Updating and Eye Movement Metrics** Hanbin Go, Britt Anderson, James Danckert
- 26.457 **Visual processing of symbology in head-fixed large Field-of-View displays** Frank L Kooi, Alexander Toet, Sofie Hoving
- 26.458 **Fixational eye movements index slow fluctuations of activity in macaque visual cortex** Richard Johnston, Matthew A Smith
- 26.459 **Impaired anti-saccade production in posterior parietal cortex damaged patients** Julie Ouerfelli-Ethier, Aarlenne Z. Khan, Laure Pisella
- 26.460 **Demonstration and quantification of memory-guided saccades in the common marmoset (with comparison to the macaque)** Hayden C Carney, Eric Hart, Alexander C Huk

## Methods: Theory, experiment, software

Saturday, May 18, 2:45 - 6:45 pm, Pavilion

- 26.461 **An open-source implementation of the Quick CSF method** Dominic Canare, Rui Ni, Tianshi Lu
- 26.462 **AutoExperiment: A program for easy creation and sharing of psychophysical studies** Sarah B Herald, Brad Duchaine
- 26.463 **Test-retest reliability for common tasks in vision science** Kait Clark, Charlotte R Pennington, Craig Hedge, Joshua T Lee, Austin C P Petrie
- 26.464 **A new method to compute classification error** Abhranil Das, R Calen Walshe, Wilson S Geisler
- 26.465 **Is there a reproducibility crisis around here? Maybe not, but we still need to change.** Alex O Holcombe, Charles Ludowici, Steve Haroz
- 26.466 **The influence of observer lapses on maximum-likelihood difference scaling** Bernhard Lang, Guillermo Aguilar, Marianne Maertens, Felix A Wichmann
- 26.467 **Linking assumptions: towards reliable measurements of perceptual scales** Guillermo Aguilar, Marianne Maertens
- 26.468 **Linking general recognition theory and classification images to study invariance and configurality of visual representations** Fabian A Soto



# SUNDAY MORNING TALKS

## Shape, Motion, Color and Depth: Integration

Sunday, May 19, 8:15 - 9:45 am, Talk Room 1

Moderator: Talia Konkle

**31.11, 8:15 am Perceptual Resolution with Simultaneous Ambiguous Color and Form** Andrew J Coia, Steven K Shevell

**31.12, 8:30 am The Coding of Color, Shape, and their Conjunction Across the Human Ventral Visual System** JohnMark E Taylor, Yaoda Xu

**31.13, 8:45 am Slant-dependent image modulation for perceiving translucent objects** Masataka Sawayama, Taiki Fukiage, Shin'ya Nishida

**31.14, 9:00 am Perceived shape from motion parallax and stereopsis in physical and virtual objects** Brittney A Hartle, Laurie M Wilcox

**31.15, 9:15 am Reliability-Weighted Template Matching Predicts Human Detection Performance in Natural Scenes** Eric Seemiller, Wilson S. Geisler

**31.16, 9:30 am Emergence of Multiple Retinotopic Maps Without a Feature Hierarchy** Talia Konkle

## Faces: Dynamics, convolutional neural networks

Sunday, May 19, 10:45 am - 12:30 pm, Talk Room 1

Moderator: Chris Baker

**32.11, 10:45 am Holistic perception of faces in 17 milliseconds: Evidence from three measures** Xiaoyi Liu, James W. Tanaka

**32.12, 11:00 am Spatial frequency tuning of single-glance familiar face recognition in a dynamic visual stream** Xiaoqian Yan, Valérie Goffaux, Bruno Rossion

**32.13, 11:15 am Rapid processing of illusory faces in inanimate objects by the human brain** Susan G Wardle, Jessica Taubert, Lina Teichmann, Chris I Baker

**32.14, 11:30 am Setting the Record Straight: Dynamic but not Static Facial Expressions are Better Recognized** Anne-Raphaëlle Richoz, Valentina Ticcinelli, Pauline Schaller, Junpeng Lao, Roberto Caldara

**32.15, 11:45 am The Sustained Familiarity Effect: A robust neural correlate of familiar face recognition** Holger Wiese, Simone C. Tüttenberg, Mike Burton, Andrew W. Young

**32.16, 12:00 pm A Human-like View-invariant Representation of Faces in Deep Neural Networks Trained with Faces but not with Objects** Naphtali Abudarham, Galit Yovel

**32.17, 12:15 pm Facial Expression Information in Deep Convolutional Neural Networks Trained for Face Identification** Y. Ivette Colon, Matthew Q Hill, Connor J Parde, Carlos D Castillo, Rajeev Ranjan, Alice J O'Toole

## Visual Memory: Neural mechanisms

Sunday, May 19, 8:15 - 9:45 am, Talk Room 2

Moderator: John Serences

**31.21, 8:15 am Neural markers of visual working memory encoding and maintenance track attentional prioritization** Christine Salahub, Holly A Lockhart, Blaire Dube, Naseem Al-Aidroos, Stephen M Emrich

**31.22, 8:30 am The influence of task-relevant vs. task-irrelevant interruption on dissociable sub-component processes of the focus of attention** Nicole Hakim, Tobias Feldmann-Wustefeld, Edward Awh, Edward K Vogel

**31.23, 8:45 am Complementary visual and motor-based strategies for encoding information in working memory** Margaret M Henderson, Rosanne L Rademaker, John T Serences

**31.24, 9:00 am Transformation of event representations along middle temporal gyrus** Anna Leshinskaya, Sharon L Thompson-Schill

**31.25, 9:15 am Neural encoding models of color working memory reveal categorical representations in sensory cortex** Thomas B Christophel, Chang Yan, Carsten Allefeld, John-Dylan Haynes

**31.26, 9:30 am A neural correlate of image memorability in infero-temporal cortex** Vahid Mehrpour, Yalda Mohsenzadeh, Andrew Jaegle, Travis Meyer, Aude Oliva, Nicole C. Rust

## Perceptual Organization

Sunday, May 19, 10:45 am - 12:30 pm, Talk Room 2

Moderator: Sung-Ho Kim

**32.21, 10:45 am Adaptation to non-numeric features reveals mechanisms of visual number encoding** Cory D Bonn, Darko Odic

**32.22, 11:00 am Constant Curvature Representations of Contour Shape** Nicholas Baker, Philip J. Kellman

**32.23, 11:15 am The judgment of causality for deformations of stretchy materials** Takahiro Kawabe

**32.24, 11:30 am Objects with salient parts break apart easily: The influence of object shape in the perceptual organization of a dynamic event and its causal structure** Jaeeun Lee, Yoonsang Lee, Sung-Ho Kim

**32.25, 11:45 am Large physical size and viewing distance enhance contour integration** Anthony D Cate, Alexander J Hawk, James M Brown

**32.26, 12:00 pm When illusions merge** Aline F. Cretienoud, Michael H. Herzog

**32.27, 12:15 pm Integration and segmentation** Elric Elias, Timothy D. Sweeny

# SUNDAY MORNING POSTERS

## Perceptual Organization and Scene Perception: Art, aesthetics, image preference

Sunday, May 19, 8:30 am - 12:30 pm, Banyan Breezeway

33.301 **Effect of presentation duration of artworks on aesthetic judgment and its positive serial dependence** Sujin Kim, David Burr, David Alais

33.302 **Measuring complexity of images using Multiscale Entropy** Elizabeth Y Zhou, Claudia Damiano, John Wilder, Dirk B Walther

33.303 **What makes an image interesting?** Bhavin Sheth, Maham Gardezi, King Hei Fung, Mariam Ismail, Mirza Baig

33.304 **Tracking aesthetic engagement: Behavioral and brain responses to artistic landscape videos** Ilkay Isik, Edward A Vessel

33.305 **Preference of facing/lighting direction for portraits paintings** Sho Kishigami, Yuma Taniyama, Shigeki Nakauchi, Tetsuto Minami

33.306 **The power of visual art: Higher felt inspiration following aesthetically pleasing visual prompts in a creative writing task** Dominik Welke, Isaac Purton, Edward A. Vessel

33.307 **Fractal statistics in the aesthetic appreciation of images, textures and sound** Catherine Viengkham, Zoey J Isherwood, Branka Spehar

33.308 **The interaction between spectral slope and symmetry on visual aesthetic preference** Chia-Ching Wu, Chien-Chung Chen

33.309 **The default mode network, but not ventral occipitotemporal cortex, contains a domain-general representation of visual aesthetic appeal** Edward A Vessel, Ayse Ilkay Isik, Amy M Belfi, Jonathan L. Stahl, G. Gabrielle Starr

33.310 **Contour features predict positive and negative emotional valence judgements** Claudia Damiano, Dirk B Walther, William A Cunningham

33.311 **Feeling beauty requires the ability to experience pleasure** Anne A Brielmann, Denis G Pelli

33.312 **Absolute beauty ratings predict mean relative beauty ratings** Qihan Wu, Anne A Brielmann, Denis G Pelli

33.313 **Preference judgement for art paintings: large-scale subjects (30K) experiment revealing age-dependency** Shigeki Nakauchi, Masaya Nishimoto, Hideki Tamura

33.314 **The role of warmth and complexity in aesthetic evaluation of color photographs.** Alexander J Bies, Margaret E Sereno

33.315 **P3 asymmetry elicited by original-pseudo art paintings using an oddball paradigm** Yuma Taniyama, Yuji Nihei, Tetsuto Minami, Shigeki Nakauchi

## Attention: Selective

Sunday, May 19, 8:30 am - 12:30 pm, Banyan Breezeway

33.316 **The magnitude of the Double-Drift illusion is lessened by a reference object with high positional certainty** Sharif Saleki, Marvin Maechler, Patrick Cavanagh, Peter Tse

33.317 **Attending to individual size modulates mean size computation** Yong Min Choi, Sang Chul Chong

33.318 **Characterizing the influence of spatial attention on stimulus-evoked cortical representations** Joshua J Foster, Edward Awh

33.319 **How exogenous attention alters perceived contrast** Lucas Huszar, Antoine Barbot, Marisa Carrasco

33.320 **Visual short-term memory load weakens attentional selection by increasing the size of attentional zoom** Hyuksu Lee, Su Keun Jeong

33.321 **How exogenous spatial attention affects visual representation** Antonio Fernandez, Hsin-Hung Li, Marisa Carrasco

33.322 **The effect of exogenous spatial attention on the contrast sensitivity function across eccentricity** Michael Jigo, Marisa Carrasco

33.323 **Switch costs of reorientation between different depth planes** Thorsten Plewan, Magali Kreutzfeldt

33.324 **Does the near/far effect on target detection depend on distance from the observer or from the fixation plane? The case of a simulated driving task with distance indicated by pictorial cues and forward motion** Jiali Song, Hong-Jin Sun, Patrick J. Bennett, Allison B. Sekuler

33.325 **Rapid covert visual attention to conceptual targets** Brad Wyble, Michael Hess, Chloe Callahan-Flintoft, Charles Folk

33.326 **Oculomotor behavior is inhibited during duration estimation** Noam Tal, Shlomit Yuval-Greenberg

33.327 **Can the N2pc ERP component track visual attention?** Pénélope Pelland-Goulet, Pierre Jolicoeur, Martin Arguin

33.328 **Induced pupil oscillations characterize the size of the attentional window at different levels of attentional load** Monique Michl, Shira Tkacz-Domb, Yaffa Yeshurun, Wolfgang Einhäuser

33.329 **Bias in space and time: the reliability of pseudoneglect** Alexandra G Mitchell, Sarah Benstock, Justin M Ales, Julie M Harris

33.330 **A Matter of Expectations: Lapses in Spatial Attention May Be Driven by Anticipatory Attentional Shifts** Christopher M Jones, Emma W Dowd, Julie D Golomb

33.331 **Our own perceptual experience, but not that of others, influences object detection** Andreas Falck, Ghislaine Labouret, Manali Draperi, Brent Strickland

33.332 **Distractor filtering via Suppression History: transient, short or long-term plasticity?** Valeria Di Caro, Chiara Della Libera

33.333 **Visual Working Memory Capacity Load Does Not Modulate Distractor Processing** Yang Guo, Nailang Yao, Yang Liu, Zaifeng Gao, Mowei Shen, Rende Shui

33.334 **Tracking the content of spatial working memory during a bout of acute aerobic exercise.** Jordan Garrett, Tom Bullock, Barry Giesbrecht

## Attention: Divided

Sunday, May 19, 8:30 am - 12:30 pm, Banyan Breezeway

33.335 **How much does divided attention limit object recognition?** Dina V Popovkina, John Palmer, Geoffrey M Boynton

33.336 **Identification and localization tasks reveal the role of strength of association in Stroop and reverse Stroop effects** Amrita M Puri, Kenith V Sobel, Alxandr Kane York

33.337 **The automatic and non-automatic aspects of unconscious visual processing** Shao-Min (Sean) Hung, Daw-An Wu, Shinsuke Shimojo

33.338 **How is Attention Deployed in a Complex Visual Environment?** Karla K Evans, Lucy S Spencer, Annakaisa Ritala

**33.339 Dividing attention across opposing features normalizes fMRI responses in visual cortex** Geoffrey M Boynton, James M Moreland

**33.340 Conflation of canonical patterns during enumeration under attentional load** Gordon Briggs, Christina Wasylshyn, Paul F Bello

**33.341 How does the visual system handle spatially predictable visual interference during a non-visual task?** Dekel Abeles, Shlomit Yuval-Greenberg

**33.342 On the interaction between Visual Working Memory and pre-saccadic attention.** Soazig Casteau, Charlotte Bush, Mary Chalkley, Natalie Rogerson, Daniel T Smith

**33.343 Pupil dilation as a predictor of perceptual capacity in subitizing** Joshua O Eayrs, Nilli Lavie

**33.344 Both exhaustive processing and limited-sample amplification contribute to ensemble averaging** Alexey U. Yakovlev, Igor S. Utochkin

**33.345 The number of visible victims shapes visual attention and compassion** Brandon M Tomm, Paul Slovic, Jiaying Zhao

**33.346 Spatial distribution of attention under varying task demands** Suhyeon Jo, Suk Won Han

**33.347 The effect of monetary reward on visual awareness** Claudia Lunghi, Arezoo Pooresmaeili

**33.348 Task-dependent effects of volitional visuospatial orienting on perception** Ralph S. Redden, Drake Mustafa, Raymond M. Klein

## Attention

Sunday, May 19, 8:30 am - 12:30 pm, Banyan Breezeway

**33.349 Modeling task influences for saccade sequence and visual relevance prediction** David Berga, Calden Wloka, John K Tsotsos

**33.350 Precise localization in conflicting context requires feedback processing** Sang-Ah Yoo, John K. Tsotsos, Mazyar Fallah

**33.351 Physical interaction makes invisible surfaces visible** Patrick C Little, Chaz Firestone

**33.352 Modeling attention during visual search with hierarchical Bayesian inference** Justin Theiss, Michael Silver

**33.353 Playing nicely with your robot.** Jeremy M Wolfe, Makaela S Nartker

**33.354 Cueing Effects in the Attentional Network Test: a Spotlight Diffusion Model Analysis** Ryan A Curl, Corey N White

**33.355 Neural mechanisms underlying individual differences in attentional blink** Liqin Zhou, Zonglei Zhen, Jia Liu, Ke Zhou

**33.356 An attentional blink for ensemble representations** Sneha Suresh, John W Roberts, Jason Haberman

**33.357 Attentional blink in preverbal infants** Shuma Tsurumi, So Kanazawa, Masami K Yamaguchi, Jun Kawahara

**33.358 Individual differences in attention switching speeds predict the magnitude of the attentional blink.** Matthew S. Peterson, Eric L Russell, Erika De Los Santos

**33.359 A compartmental model of feedback modulation in visual cortex** Christian Jarvers, Heiko Neumann

**33.360 Selective Attention Desynchronizes Automatic Movements** Xilei Zhang, Wenming Zheng, Xiangyong Yuan

## Perception and Action: Reaching and grasping

Sunday, May 19, 8:30 am - 12:30 pm, Banyan Breezeway

**33.361 Grasping 2-D Targets in Motion: The Influence of a Preferable Central Grasp Location on Eye-Hand Coordination** Ryan W. Langridge, Jonathan J. Marotta

**33.362 Eye-hand Coordination in Reaching and Grasping Vertically Translating Targets** Matsya R. Thulasiram, Ryan W. Langridge, Hana H. Abbas, Jonathan J. Marotta

**33.363 Interaction of eye and hand movements during visual control of human reaching** Yan Yang, Dongbiao Sun

**33.364 Grasping complex 3D shapes** Zoltan Derzsi, Robert Volcic

**33.365 Sensory feedback reduces scalar variability effects in perception and action tasks** Ailin Deng, Evan Cesanek, Fulvio Domini

**33.366 Perceiving and grasping the equiluminant Ebbinghaus illusion** Sofia Lavrenteva, Ikuya Murakami

**33.367 Which brain areas are responsible for which aspects of grasping?** Lina K Klein, Guido Maiello, Daria Proklova, Vivian C Paulun, Jody C Culham, Roland W Fleming

**33.368 The timing of 'vision for action' and 'vision for perception' magnetoencephalography (MEG) responses during real and pantomimed grasps** Rosa M Sola Molina, Laila Hugrass, Gemma Lamp, David P Crewther, Melvyn A Goodale, Sheila G Crewther

**33.369 Investigating common coding of action execution and observation in the macaque monkey using cross-modal fMRI adaptation.** Saloni Sharma, Koen Nelissen

**33.370 What's in the mirror? fMRI responses in the monkey action observation network while observing conspecific transitive and intransitive hand and tail actions.** Ding Cui, Mathias Vissers, Saloni Sharma, Koen Nelissen

**33.371 Monkey fMRI brain responses to different viewpoints of observed hand actions.** Koen Nelissen, Prosper A. Fiave

**33.372 The deployment of spatial attention during goal-directed action alters audio-visual integration** Tristan Loria, Joëlle Hajji, Kanji Tanaka, Katsumi Watanabe, Luc Tremblay

**33.373 Prediction shapes visually-guided grasping and modulates somatosensory perception** Maximilian D. Broda, Dimitris Voudouris, Katja Fiehler

**33.374 Object encoding but not action understanding in the macaque medial reach-to-grasp network** Patrizia Fattori, Rossella Breveglieri, Francesco E Vaccari, Annalisa Bosco, Michela Gamberini, Claudio Galletti

## Object Recognition: Neural mechanisms

Sunday, May 19, 8:30 am - 12:30 pm, Pavilion

**33.401 Mapping information accumulation and integration dynamics across ventral temporal cortex** Matthew J Boring, Michael J Ward, R. Mark Richardson, Avniel Singh Ghuman

**33.402 Connectivity Fingerprints for the Visual Brain and Behavior** David E Osher, Zeynep M Saygin

**33.403 Assessing Reproducibility of MEG and fMRI Data Fusion Method in Neural Dynamics of Object Vision** Benjamin Lahner, Yalda Mohsenzadeh, Caitlin Mullin, Radoslaw Cichy, Aude Oliva

**33.404 Roles of animacy, shape, and spatial frequency in shaping category selectivity in the occipitotemporal cortex** Chenxi He, Shao-Chin Hung, Olivia S. Cheung

**33.405 The spatio-temporal dynamics of personally-meaningful objects** Jasper JF van den Bosch, Ian Charest

**33.406 Alpha bursts in inferior parietal cortex underlie object individuation in dynamic scenes** Andreas Wutz, Agnese Zazio, Nathan Weisz

**33.407 The role of body partonomics and biological class in the representation of animacy in the ventral visual pathway** J.Brendan W Ritchie, Joyce Bosmans, Shuo Sun, Kirsten Verhaegen, Astrid Zeman, Hans Op de Beeck

**33.408 Do responses in nonhuman primate inferior temporal cortex reflect external variables or internal dynamics?** Marieke Mur, Andrew Bell, Nicholas J Malecek, Elyse L Morin, John Duncan, Nikolaus Kriegeskorte

**33.409 Comparing novel object learning in humans, models, and monkeys** Michael J Lee, James J DiCarlo

**33.410 Category-selective patterns of neural response to objects with similar image properties, but different semantic properties.** Timothy J Andrews, Afrodite Giannkopoulou, Sanah Ali, Burcu Goz, David D Coggan

**33.411 Object Semantic Knowledge Can Bias Visual Processing Toward the Dorsal and Ventral Stream** Dick Dubbelde, Sarah Shomstein

**33.412 Parahippocampal cortex represents the natural statistics of object context** Michael F Bonner, Russell A Epstein

**33.413 Meta-analyses support the expertise hypothesis of the right fusiform face area** Edwin J Burns, Cindy Bukach

**33.414 Modeling voxel visual selectivities through convolutional neural network clustering** Daniel D Leeds, Amy Feng

## Development: Lifespan, neural mechanisms

Sunday, May 19, 8:30 am - 12:30 pm, Pavilion

**33.415 Children's use of local and global visual features for material perception** Benjamin Balas, Amanda Auen, Josselyn Thrash, Shea Lammers

**33.416 The innateness of visual number: A case study using children's counting books** Emily M Sanford, Justin Halberda

**33.417 An Objective and Sensitive Visual Acuity Assessment Method for Preverbal and Infantile Children Based on Steady-State Motion Visual Evoked Potentials** Xiaowei Zheng, Guanghua Xu, Yunyun Wang, Sicong Zhang, Chenghang Du, Long Hao

**33.418 Differences in Visual Search and Eye Movements Between Caesarean-Section and Vaginally-Delivered Infants and Adults** Maryam Rahimi, Scott A. Adler

**33.419 Adults' Selective Attention and Eye Movements as a Function of Birth Experience** Scott A Adler, Kyle J Comishen, Audrey M B Wong-Kee-You

**33.420 Developmental changes in connectivity between the amygdala subnuclei and visual regions** Heather A Hansen, Zeynep M Saygin

**33.421 Guided visual search in junior schoolchildren: Slow but sure** Maria Falikman, Igor Utochkin, Yury Markov, Natalia Tiurina, Olga Khasina

**33.422 Effects of age and target modality on spatial localization on the horizontal plane** Douglas A Addleman, Yingzi Xiong, Gordon E Legge

**33.423 Occipital alpha changes in response to label-learning during infancy** Ryan A Barry-Anwar, Gabriella Silva, Andreas Keil, Lisa S Scott

**33.424 The Global Precedence Effect in Children With and Without the Use of Complex Instructions** Emily C Blakley, Nicholas Duggan, Sarah Olsen, Alecia Moser, Peter Gerhardstein

**33.425 Aging and the perception of global structure** Alexia Higginbotham, Farley Norman

**33.426 Development of Face Discrimination in Infancy: An Eye Tracking Study** Andrew T Marin, Karen Dobkins, Rain Bosworth

**33.427 The development of form and motion perception from school-age to adulthood: comparing sensitivity to luminance- and texture-defined stimuli.** Margarita Miseros, Domenico Tullio, Jocelyn Faubert, Armando Bertone

**33.428 Development of human infants' receptive field mechanisms in motion processing** Yusuke Nakashima, So Kanazawa, Masami K Yamaguchi

**33.429 Temporal contrast sensitivity is associated with retinal thickness** Nancy J Coletta

**33.430 Grouping of flankers is similar in children to adults and does not break crowding.** Sarah J Waugh, Monika A Formankiewicz

**33.431 Development of entorhinal grid-cell-like representations of visual space** Joshua B Julian, Matthias Nau, Christian F Doeller

**33.432 Tactile influences on visual processing of bodily information in infant** Jiale Yang, Natasa Ganea, So Kanazawa, Masami K. Yamaguchi, Andrew Bremner

**33.433 How mature are connectivity patterns in the neonate brain?** Jin Li, Athena L. Howell, Micah R. Rhodes, Zeynep M. Saygin

**33.434 Predicting individual reading ability based on anatomical and functional neural connectivity** Carver B. Nabb, Heather A. Hansen, Stephen A. Petrill, Zeynep M. Saygin

**33.435 Investigating the influence of early life touchscreen use on screen-based attention control** Ana M Portugal, Rachael Bedford, Celeste Cheung, Tim J. Smith

**33.436 Test battery for daily self-assessment of visual abilities** Kenchi Hosokawa, Kazushi Maruya, Shin'ya Nishida, Satoshi Nakadomari

**33.437 Better statistical regularity with aging? Age-related difference in the neural processing of idioms** Su-Ling Yeh, Shuo-Heng Li, Li Jingling, Joshua Oon Soo Goh, Yi-Ping Chao, Arthur C. Tsai

## Spatial Vision: Low-level coding, natural image statistics

Sunday, May 19, 8:30 am - 12:30 pm, Pavilion

**33.438 What surface in the world is in best focus for the human eye?** Vivek Labhishetty, Agostino Gibaldi, Larry N Thibos, Martin S Banks

**33.439 Measuring the field of contrast sensitivity via saccadic foraging.** Concetta F Alberti, Anna Kosovicheva, Peter J Bex

**33.440 Quick contrast sensitivity assessment in primates using an exploratory search task** Mariana Cardoso, Najib J. Majaj, Gerick M. Lee, Krysten Garcia, Lynne Kiorpes

**33.441 The extent of the vertical meridian asymmetry in spatial frequency sensitivity** Shutian Xue, Antoine Barbot, Marisa Carrasco

**33.442 Temporal property of the density-size adaptation effect** Rumi Hisakata, Hirohiko Kaneko

**33.443 Eccentricity-dependent differences in cross-orientation adaptation** Yi Gao, Fang Jiang, Michael A. Webster

**33.444 Fixation-Related Potentials and Oculomotor Dynamics reveal Contrast Response and Adaptation in Free Viewing** Oren S Kadosh, Yoram Bonneh

**33.445 A continuum in the retinal modulations resulting from eye movements** Michele Rucci, Janis Intoy, Zhetuo Zhao, Jonathan D Victor

**33.446 A Comparison of Receptive Field Structures of Hierarchical Models of V2** Joshua Bowren, Luis Sanchez Giraldo, Odelia Schwartz

**33.447 The critical reliance of early visual cortex on the fractal structure of natural scenes** Zoey J Isherwood, Colin WG Clifford, Mark M Schira, Branka Spehar

**33.448 Comparing population receptive fields in human and macaque visual cortex** Edward H Silson, Susheel Kumar, Benjamin Jung, Elissa Koele, Clarissa James, Adam Messinger, Chris I Baker, Jessica Taubert

**33.449 Visual evoked potentials elicited by complex scenes are regulated by high spatial frequency content** Andrew M Haun, Bruce C Hansen

**33.450 Image-statistics correlates of visual evoked potentials to natural texture images** Taiki Orima, Isamu Motoyoshi

**33.451 Sensitivity of inferotemporal cortex to naturalistic image statistics in developing macaques** Gerick M. Lee, Darren A. Seibert, Najib J. Majaj, J. Anthony Movshon, Lynne Kiorpes

**33.452 The role of local image statistics in separating figure from ground** Jonathan Victor, Mary M Conte

**33.453 Deep neural network features predict perceptual sensitivity and cortical responses to visual textures** Akshay V Jagadeesh, Justin L Gardner

**33.454 Contrast Sensitivity in Naturalistic Images Measured Using Generative Adversarial Nets** Elee D Stalker, Jaykithan Y Patel, Ingo Fruend

**33.455 Invariance of Human Image Recognition Measured Using Generative Adversarial Nets** Jaykishan Y Patel, Elee D Stalker, Ingo Fruend

**33.456 Partial awareness based on the parallel processing of spatial frequency** Cheongil Kim, Sang Chul Chong

## Eye Movements: Cognition

Sunday, May 19, 8:30 am - 12:30 pm, Pavilion

**33.457 Re-re-considering Yarbus: Predicting observer "taskiness" from eye movement patterns** Dylan Rose, Peter Bex

**33.458 Investigating volitional attentional control during film viewing** Taylor L Simonson, John P Hutson, Shunsuke Kumakiri, Ryoh Takamori, Ella Mcleod, Hudson Treyu, Yuhang Ma, Anna Cook, Katherine Kolze, Kenzi Kriss, Ost Nicholas, Yoshiyuki Uehara, Jun Saiki, Lester C Loschky

**33.459 Gaze bias during preference-based decision making** James P Wilmott, Rachel Souza, Carolina Haas-Koffler, Joo-Hyun Song

**33.460 The effect of eye movements in preferential decision** Dan Uemura, Shouta Katayama, Kenji Yokoi

**33.461 Examining whether eye movement behavior contributes to in-group bias in memory** Mengzhu Fu, Matthew G Rhodes, Michael D Dodd

**33.462 Examining the relationship between eye movement kinematics and schizotypy in the normal population** Lauren N Bandel, Marian E Berryhill, Michael D Dodd

**33.463 Distinct pupil features correlate with between-participant and across-session performance variability in a 16-week, longitudinal data set** Russell A Cohen Hoffing, Steven M Thurman, Nina Lauharatanahirun, Daniel E Forster, Javier O Garcia, Nick Wasylshyn, Barry Giesbrecht, Scott T Grafton, Jean M Vettel

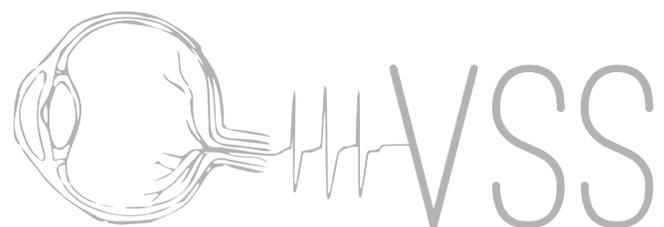
**33.464 Ocular Motor Function and Information Processing in Young and Older Adults** Sheila Crewther, Deena Ebaid

**33.465 Congruency Effects in the Attention Network Task: The Influence of Stimulus Onset Asynchrony and Eye Movements** Anthony J Ries, David Slayback, Erika Fulbright, Marisa Sligh, Kaliyah Gorman, Jon Touryan

**33.466 Eye-movement analysis of training effectiveness for microexpression recognition** Xunbing Shen, Gaojie Fan

**33.467 Predicting Mental States from Eye Movements During Reading** Seoyoung Ahn, Gregory J. Zelinsky

**33.468 iMap4D: an Open Source Toolbox for Statistical Fixation Mapping of Eye-Tracking Data in Virtual Reality** Valentina Ticcinelli, Peter De Lissa, Denis Lalanne, Sebastien Miellet, Roberto Caldara



# SUNDAY AFTERNOON TALKS

## Objects and Scenes: Shape categorization, scene perception

Sunday, May 19, 2:30 - 4:15 pm, Talk Room 1

Moderator: Michelle Greene

34.11, 2:30 pm **Perceiving Sets and Categories** Noam Khayat, Shaul Hochstein

34.12, 2:45 pm **Shape similarity and shape categorization using Bayesian shape skeletons** Nathan R J Destler, Manish Singh, Jacob Feldman

34.13, 3:00 pm **Fast Periodic Visual Stimulation EEG as an implicit measure for perceptual discrimination and categorization of mid-level objects.** Jaana Van Overwalle, Stephanie Van der Donck, Sander Van de Cruys, Bart Boets, Johan Wagemans

34.14, 3:15 pm **What is a scene? Concavity as an intrinsic property of a scene** Annie Cheng, Dirk B Walther, Soojin Park, Daniel D Dilks

34.15, 3:30 pm **Perceptual grouping aids recognition of line drawings of scenes by CNNs** Morteza Rezanejad, Gabriel Downs, John Wilder, Dirk B. Walther, Allan Jepson, Sven Dickinson, Kaleem Siddiqi

34.16, 3:45 pm **High-def memories of low-def scenes: A new phenomenon of "vividness extension"** Jose Rivera-Aparicio, Chaz Firestone

34.17, 4:00 pm **The role of recurrent processing in visual scene categorization** Jamie L Siegart, Wuyue Zhou, Enton Lam, Munashe Machoko, Michelle R Greene

## Visual Search: Models, neural mechanisms

Sunday, May 19, 5:15 - 7:15 pm, Talk Room 1

Moderator: Stefanie Becker

35.11, 5:15 pm **Selection and Enhancement: Modeling Attentional Capture during Visual Search** Andrew Lovett, Will Bridewell, Paul Bello

35.12, 5:30 pm **The psychophysics of visual search with heterogeneous distractors: effects of set size, task, temporal order and stimulus spacing** Andra L Mihali, Wei Ji Ma

35.13, 5:45 pm **Computational strategies used during hybrid visual search** Farahnaz A. Wick, Gabriel Kreiman, Jeremy M. Wolfe

35.14, 6:00 pm **Scene context does not necessarily limit processing to target-consistent regions in visual search.** Gavin JP Ng, Jiahao Zhou, Simona Buetti, Alejandro Lleras

35.15, 6:15 pm **At what stage of the visual processing hierarchy is visual search relational and context-dependent vs. feature-specific?** Stefanie I. Becker, Aimee Martin, Nonie J Finlayson

35.16, 6:30 pm **Induction of Shape Selectivity in Macaque Frontal Eye Field Dissociates Perceptual and Motor Processing Stages of Visual Search** Kaleb A Lowe, Jeffrey D Schall

35.17, 6:45 pm **Inhibitory tagging of previously-foveated locations in the superior colliculus during visual search** Rakesh K Nanjappa, Robert M McPeck

35.18, 7:00 pm **Laminar organization of the superior colliculus priority map** Brian J White, Janis Y Kan, Laurent Itti, Douglas P Munoz

## Binocular Vision

Sunday, May 19, 2:30 - 4:15 pm, Talk Room 2

Moderator: Alexander Maier

34.21, 2:30 pm **Monovision and the misperception of motion** Johannes Burge, Victor Rodriguez-Lopez, Carlos Dorronsoro

34.22, 2:45 pm **Nasotemporal Division of Retina is Well Suited for Disparities of Natural Scenes** Agostino Gibaldi, Martin S Banks

34.23, 3:00 pm **Playing 3-dimensional (3D), but not 2D video games can improve stereoacuity in neurotypical observers.** Dennis Levi, Roger W Li

34.24, 3:15 pm **Can human stereopsis improve by making the eyes optically perfect?** Cherlyn J Ng, Martin S Banks, Duje Tadin, Randolph Blake, Geunyoung Yoon

34.25, 3:30 pm **Binocular Modulation of Monocular Neurons in the Primary Visual Pathway** Kacie Dougherty, Michele A Cox, Jacob A Westerberg, Alexander Maier

34.26, 3:45 pm **Interocular conflict predicts individual differences in binocular rivalry** Janine D Mendola, Elizabeth A Bock, Jeremy D Fesi, Sylvain Baillet

34.27, 4:00 pm **The Attentional Modulation of Binocular Rivalry: an OKN Approach** Stella C Qian, Jan W Brascamp

## Visual Memory: Working memory

Sunday, May 19, 5:15 - 7:15 pm, Talk Room 2

Moderator: Keisuke Fukuda

35.21, 5:15 pm **Human gaze tracks the focusing of attention within the internal space of visual working memory** Freek van Ede, Sammi R Chekroud, Anna C Nobre

35.22, 5:30 pm **Real-time triggering reveals sustained attention and working memory lapse together** Megan T deBettencourt, Paul A Keene, Edward Awh, Edward K Vogel

35.23, 5:45 pm **Representation of active and latent items in working-memory-guided behavior** Paul S Muhle-Karbe, Nicholas E Myers, Mark G Stokes

35.24, 6:00 pm **Is set size six really set size six? Relational coding in visual working memory.** Chaipat Chunharas, Timothy F Brady

35.25, 6:15 pm **Serial dependence requires retrieval of relevant information from the previous trial** Giyeul Bae, Steven J. Luck

35.26, 6:30 pm **Consolidation: How information limits visual working memory capacity** Qian Yu, Justin Halberda

35.27, 6:45 pm **Visual ZIP files: Mental rotation overcomes capacity limits by compressing objects** Hauke S Meyerhoff, Nicole Jardine, Mike Stieff, Mary Hegarty, Steve Franconeri

35.28, 7:00 pm **Evolution and Development of Signature Limits in Mental Manipulation** Irene M Pepperberg, Melissa Libertus, Lisa Feigenson, Justin Halberda, Hrag Pailian

# SUNDAY AFTERNOON POSTERS

## Faces: Experience, expertise

Sunday, May 19, 2:45 - 6:45 pm, Banyan Breezeway

**36.301 Individual Differences in Holistic Processing of Mooney Faces** Teresa Canas Bajo, Mauro Manassi, David Whitney

**36.302 Normative data for two ecologically valid tests of face identity matching** Lisa Stacchi, Eva Huguenin-Elie, Roberto Caldara, Meike Ramon

**36.303 The Cost of Matching Depth-Rotated Faces: A Simple Function of Image Similarity** Irving Biederman, Tianyi Zhu, Miles Nelken, Emily X Meschke, Catrina M Hacker

**36.304 High test-retest reliability of a neural index of rapid automatic discrimination of unfamiliar individual faces** Milena Dzhelyova, Giulia Dormal, Corentin Jacques, Caroline Michel, Christine Schiltz, Bruno Rossion

**36.305 The two-faces of recognition ability: better face recognizers extract different physical content from left and right sides of face stimuli** Simon Faghel-Soubeyrand, Arjen Alink, Eva Bamps, Rose-Marie Gervais, Frédéric Gosselin, Ian Charest

**36.306 The Good, the Bad, and the Average: Characterizing the Relationship Between Face and Object Processing Across the Face Recognition Spectrum** Christian Gerlach, Rebecca Hendel, Randi Starrfelt

**36.307 Super-Recognizers in Criminal Investigation - Hype or Hope?** Meike Ramon

**36.308 Not just in FFA: becoming an expert also drives the activity, and changes the pattern, of early visual cortex** Chien-Shu Chu, Kuo Liu, Chun-Chia Kung

**36.309 Beyond activity changes: appropriate expertise training not just drives higher activities, but also faster BOLD onset and better classifications for Greebles** Chun-Chia Kung, Chien-Shu Chu, Yi Lin, Hanshin Jo, Kuo Liu

**36.310 A direct support for the perceptual expertise hypothesis of FFA: interactive face- and bird-selectivity in bird experts.** Nian Ting Yang, Chun Chia Kung, Chien Shu Chu

**36.311 The dynamics of face learning: Insights from similarity ratings.** Kristen A Baker, Catherine J Mondloch

**36.312 Inducing the use of information for face identification** Jessica Tardif, Caroline Blais, Frédéric Gosselin

**36.313 The Development of Emotion Perception: Evidence from an Unconstrained Sorting Task** Catherine J Mondloch, Claire M Matthews, Shelby Howlett

**36.314 The Importance of Within-Person Variability in Appearance in Adults' and Children's Face Learning** Claire M Matthews, Kay L Ritchie, Sarah Laurence, Catherine J Mondloch

**36.315 Learning newly encountered faces from variable images in adults and children** Sarah Laurence, Nicola Ralph, Eloise De Carvalho, Valentina Proietti, Catherine J Mondloch

**36.316 The Capacity for Face Perception is Independent of the Capacity for Face Memory** Catrina M Hacker, Irving Biederman

## Attention: Capture

Sunday, May 19, 2:45 - 6:45 pm, Banyan Breezeway

**36.317 Testing a Priming Account of the Contingent-Capture Effect** Ulrich Ansorge, Tobias Schoeberl, Florian Goller

**36.318 Statistical learning can modulate contingent attentional capture** Matthew D Hilchey, Blaire J Weidler, Jay Pratt

**36.319 Context-specific long-term habituation of attentional capture** Francesca Bonetti, Cinzia Chiandetti, David Pascucci, Massimo Turatto

**36.320 Surprise capture of the eyes can be (almost) as reliable and fast as top-down contingent capture** Gernot Horstmann, Daniel Ernst

**36.321 The role of attention in the action effect** So Ri Jung, Ki Bbum Lee, Myeongjin Lee, Eunhee Ji, Min-Shik Kim

**36.322 Influences of Prediction Errors in Establishment of Attentional Control Settings during Incidental Associative Learning** Sunghyun Kim, Melissa R. Beck

**36.323 Electrophysiological Evidence for Competition in Spatial Attention by Entirely Irrelevant Unisensory and Multisensory Distractors** Jessica Lunn, Jamie Ward, Salvador Soto-Faraco, Nick Berggren, Sophie Forster

**36.324 Acute stress, either social or physical, alters the priority of salient feared distracters but not neutral salient distracters** Mary H MacLean, Alex P Boone, Tom Bullock, Tyler Santander, Jamie Raymer, Liann Jimmons, Alex Stuber, Gold N Okafor, Scott T Grafton, Michael B Miller, Barry Giesbrecht

**36.325 Prior reward learning biases selective attention among 9-12-month-old infants** Julie Markant, Brianna Keenan, Kelsey Offen

**36.326 Frequency of exposure and target salience affect the extinction of value-driven attention capture** Anne E Milner, Mary H MacLean, Barry Giesbrecht

**36.327 Modulating attentional capture via Transcranial Magnetic Stimulation (TMS) of right TPJ** Carlotta Lega, Oscar Ferrante, Elisa Santandrea, Luigi Cattaneo, Leonardo Chelazzi

**36.328 Under Load: Attentional Capture for a Dynamic Looming Singleton in a Dual-Task Paradigm** Joanna E Lewis, Mark B Neider

**36.329 Dimensional constraints on distractor handling during pop-out search** Heinrich R. Liesefeld, Hermann J. Müller

## Perception and Action: Decision making, neural mechanisms

Sunday, May 19, 2:45 - 6:45 pm, Banyan Breezeway

**36.330 Confidence and perceptual judgments are based on different internal representations** Kyuin Kim, Sang Chul Chong

**36.331 Comparing visual discrimination and detection: the special status of 'no' responses** Matan Mazor, Lucie Charles, Karl J. Friston, Stephen M. Fleming

**36.332 'Priors' need not occur at perception: Pre vs. Post-stimulus cueing in a delayed matching task.** Syaheed B Jabar, Daryl Fougny

**36.333 Assessing the visual capabilities of the ferret using psychophysics and electrophysiology.** Erika L Dunn-Weiss, Kristina J Nielsen

**36.334 Confidence as a priority signal in perceptual decision-making** David Aguilar Lleyda, Maxime Lemarchand, Vincent de Gardelle

**36.335 Making a sound decision from temporally accumulated conflicting visual information** Viola Mocz, Yaoda Xu

36.336 **Overlapping and unique neural circuits support perceptual decision making and confidence** Jiwon Yeon, Dobromir Rahnev

36.337 **Mixing different contrasts inflates estimated metacognitive ability in perceptual decision making** Dobromir Rahnev, Stephen M Fleming

36.338 **The nature of metacognitive imperfection in perceptual decision making** Medha Shekhar, Dobromir Rahnev

36.339 **All-optical stimulation and imaging in macaque V1 reveals neural and behavioral masking effects of optogenetic stimulation in a threshold detection task** Spencer C Chen, Giacomo Benvenuti, Matthew P Whitmire, Yuzhi Chen, Eyal Seidemann, Wilson S Geisler

36.340 **Title: Trading off probability and reward in structured lottery tasks** Laurence Maloney, Mordechai Z Juni, Denise Bercovitch, Todd M Gureckis

36.341 **Monitoring and proactive control of visual search speed-accuracy tradeoff by supplementary eye field** Thomas Reppert, Richard P Heitz, Jeffrey D Schall

36.342 **Decision threshold in a perceptual task is influenced by information content of a pre-training stimulus** Tyler Barnes-Diana, Yuka Sasaki, Takeo Watanabe

## Eye Movements: Perception

Sunday, May 19, 2:45 - 6:45 pm, Banyan Breezeway

36.343 **Control and coordination of fixational eye movements in the Snellen acuity test** Janis Intoy, Michele A Cox, Michele Rucci

36.344 **Perceptual sensitivity to fine detail across the foveola** Martina Poletti, Natalya Shelchkova

36.345 **Oculomotor strategy classification in simulated central vision loss** Marcello Maniglia, Kristina M Visscher, Aaron R Seitz

36.346 **The robust vertical visual field asymmetry for presaccadic fixation durations: A meta-analysis** Harold H Greene, James M Brown, Gregory P Strauss

36.347 **Age effects on saccadic suppression** Doris Braun, Alexander C Schütz, Jutta Billino, Karl R Gegenfurtner

36.348 **Novel offline technique to process and understand interaction with printed imagery** Anjali K Jogeshwar, Gabriel J. Diaz, Jeff B. Pelz

36.349 **Controlling readability of head-fixed large field-of-view displays** Alexander Toet, Frank L. Kooi

## Eye Movements: Natural and less natural scenes

Sunday, May 19, 2:45 - 6:45 pm, Banyan Breezeway

36.350 **Evidence for closed-loop visual acquisition** Liron Zipora Gruber, Ehud Ahissar

36.351 **Towards End to End head-free gaze classification** Rakshit S Kothari, Zhizhuo Yang, Chris Kanan, Jeff Pelz, Reynold Bailey, Gabriel J Diaz

36.352 **Hardware Modification for Improved Eye Tracking with the Pupil Labs Virtual-Reality Integration** Clara Richter, Catherine A Fromm, Gabriel J Diaz

36.353 **Can you look at your finger in the dark?** Eli Brenner, Lotte Laan, Erik van Lopik, Jeroen BJ Smeets, Irene A Kuling

36.354 **Cognitive and Perceptual Influences on Eye Movements and Object Memory in Real Environments** Sara Spotorno, Ioana Dragusin, Clare Kirtley, Benjamin W Tatler

36.355 **Characterization of natural head and eye movements driving retinal flow** Paul R MacNeilage, Luan Nguyen, Christian Sinnott

36.356 **Decoupling eye movements from retinal image motion reveals active fixation control** Michele A Cox, Norick R Bowers, Janis Intoy, Martina Poletti, Michele Rucci

36.357 **Initial fixations differ for brightness and stiffness judgments** Lorilei M Alley, Matteo Toscani, Robert J Ennis, Katja Doerschner

36.358 **Gaze Behavior During 360°, Naturalistic Scene-Viewing** Thomas L Botch, Jeff Mentch, Caroline E Robertson

36.359 **The effect of the Pre-Flight Introduction training (PFI) on gaze behavior and flight performance of student pilots** Stephanie Brams, Rafaël F Rejtman, Ignace TC Hooge, Gal Ziv, Oron Levin, Ken Evens, Tony De Wolf, Werner F Helsen

36.360 **ZoomMaps: Using Zoom to Capture Areas of Interest on Images** Zoya Bylinskii, Anelise Newman, Matthew Tancik, Spandan Madan, Fredo Durand, Aude Oliva

36.361 **The Effect of Visual Long-Term Memory on Eye Movements over Time** Lisa F Schwetlick, Hans A Trukenbrod, Ralf Engbert

36.362 **How body movements in a task predict visual attention dynamically** John A Harston, William W Abbott, Aldo Faisal

36.363 **The fixation-related N400 during natural scene viewing: Investigating the foveal vs. extrafoveal processing of object semantics** Moreno I Coco, Antje Nuthmann, Olaf Dimigen

## Perceptual Organization: Grouping

Sunday, May 19, 2:45 - 6:45 pm, Banyan Breezeway

36.364 **A striking discontinuity in visual number estimation at 20 is unaffected by extended exposure time** Frank Durgin, Makayla Portley

36.365 **Displaying Variability Better: Can We Leverage Gestalt Principles to Aid Display Comprehension?** Mike Tymoski, Jessica K Witt

36.366 **Color tuning mechanisms for perceptual grouping competition in the chromatic Glass patterns** Lee Lin, Chien-Chung Chen

36.367 **A Neural Circuit for Perceptual Grouping, Segmentation, and Selection** Maria Kon, Gregory Francis

36.368 **Competing unconscious reference-frames shape conscious motion perception** Oh-hyeon Choung, Marc M Lauffs, Haluk Ögmen, Dirk Kerzel, Michael H Herzog

36.369 **Perception With and Without Attention: Neural Correlates of Grouping by Similarity in Preattention and Divided-Attention Conditions** Tiffany A Carther-Krone, Jane Lawrence-Dewar, Andrew J Collegio, Joseph C Nah, Sarah Shomstein, Jonathan J Marotta

36.370 **A Model with Top-down Control of the Range of Perceptual Grouping** Gregory Francis, Alban Bornet

36.371 **Spatial mechanisms underlying the detection and localisation of mirror-symmetry** Elena Gheorghiu, Rebecca J Sharman

36.372 **Orientation of pattern elements does not influence mirror-symmetry perception** Rebecca J Sharman, Elena Gheorghiu

36.373 **Remembered Together: Recognition accuracy for visual features of interacting partners is enhanced in the presence of outgroup distractors, but decreased in the presence of ingroup distractors.** Tim Vestner, Jonathan C Flavell, Richard Cook, Steven P Tipper

36.374 **Biases in the perception of the ambiguous motion quartet across spatial scale** Charlotte Boeykens, Johan Wagemans, Pieter Moors

## Faces: Social and cultural factors

Sunday, May 19, 2:45 - 6:45 pm, Pavilion

**36.401 Manipulating social perceptions with an autoencoding model of faces - ModifAE, a useful tool for face perception studies.** Amanda Song, Chad Atalla, Bartholomew Tam, Garrison Cottrell

**36.402 An Own-Age Bias in Mixed- and Pure-List Presentations: No Evidence for the Social-Cognitive Account** Sophie L Cronin, Belinda M Craig, Ottmar V Lipp

**36.403 The impact of race and affect on infant visual attention to faces** Kelly C Roth, Emily K Grimes, William J Chollman, Jennifer Shearon, Cathryn Pryor, Cole Green, Greg D Reynolds

**36.404 Race categories and implicit biases in children and adults** Arushi Sachdeva, Melissa Mildort, Gizelle Anzures

**36.405 Event-related potentials, race categorization, and implicit racial biases in children and adults** Haylee F Trulson, Melissa Mildort, Gizelle Anzures

**36.406 Evaluating Trustworthiness: Differences in Visual Representations as a Function of Face Ethnicity** Francis Gingras, Karolann Robinson, Daniel Fiset, Caroline Blais

**36.407 Perceptual Experience and Within-Person Variability Affect the Magnitude of the Other-Race Effect** Xiaomei Zhou, Chun-Man Chen, Catherine J. Mondloch, Sarina Hui-Lin Chien, Margaret Moulson

**36.408 Learning own- and other-race facial identities through exposure to natural variability: Evidence from behavioural and ERP measures** Simone C Tüttenberg, Holger Wiese

**36.409 Recognition of faces despite changes in appearance: How similarity and race affect our tolerance for within-person variability** Alexandra R Marquis, Xiaomei Zhou, Margaret C Moulson

**36.410 Evidence of an other race effect for video game character faces** Jennifer A Day, Nicolas Davidenko, Hannah Hart-Pomerantz

**36.411 The impact of gender on visual strategies underlying the discrimination of facial expressions of pain.** Camille Saumure, Marie-Pier Plouffe-Demers, Daniel Fiset, Stéphanie Cormier, Miriam Kunz, Caroline Blais

**36.412 Neural Correlates of Emotional Expression Processing of East-Asian Faces: An fMRI and Dynamic Causal Modeling Investigation** Ya-Yun Chen, Chi-Chuan Chen, Yu Song Haw, Chin-Hui Chen, Joshua O. S. Goh, Shih-Tseng Tina Huang, Gary C.-W. Shyi

**36.413 Cross-species differences in the perception of dynamic facial expressions** Nick Taubert, Michael Stettler, Louisa Sting, Ramona Siebert, Silvia Spadacenta, Peter Dicke, Hans P. Thier, Martin A. Giese

**36.414 Facial features for age judgments across cultures** Nicolas Dupuis-Roy, Frederic Gosselin, Qin Lin Zhang, Zach Schendel, Amir Ashkenazi, Ed Covell, Kevin Blot, Jean-Marc Dessirier, Helen Meldrum

**36.415 Religious-Contingent Aftereffects for Christian and Muslim Faces** Victoria Foglia, M.D. Rutherford

**36.416 The Relationships Between Waist-to-Hip Ratio (WHR), Waist-to-Stature Ratio (WSR), and Body Mass Index (BMI) on Ratings of Women's Body Attractiveness and Health** Amanda D Golden Eddy, Jessie J Peissig

**36.417 "You're my doctor?": Stereotype-incongruent identities impair recognition of incidental visual features** Austin A. Baker, Jorge Morales, Chaz Firestone

**36.418 A Quick Read: Affective Empathy Reduces the Time to Recognize Identity in Video Morphs** Pascaline Mugiraneza Munezero, Olivia Stibolt, Kendall Stewart, Jane Song, Thalia Viranda, Christopher Cotter, Cindy M. Bukach

**36.419 Variation of empathy in viewers impacts facial features encoded in their mental representation of pain expression.**

Marie-Pier Plouffe Demers, Camille Saumure, Daniel Fiset, Stéphanie Cormier, Miriam Kunz, Caroline Blais

**36.420 Role of implicit social attitude on holistic face perception** Olivia S. Cheung, Wei Chen, Mahlet T. Kassa

**36.421 Individual differences in attractiveness perception predict social inferences, but not all altruistic desires** Glenn Rose, Edwin J Burns, Cindy Bukach

## Development: Atypical

Sunday, May 19, 2:45 - 6:45 pm, Pavilion

**36.422 Learning and visual attention across neurodevelopmental conditions: Using Multiple Object-Tracking as a descriptor of visual attention** Domenico Tullo, Jocelyn Faubert, Armando Bertone

**36.423 Implicit learning of perceptual distributions in children with ASD** Lisa Lemmens, Sander Van de Cruys, Andrey Chetverikov, Laurie-Anne Sapey-Triomphe, Ilse Noens, Johan Wagemans

**36.424 Learning during noisy vision in 3-year-olds at high and low risk for autism** Emma K Ward, Jan K Buitelaar, Sabine Hunnius

**36.425 Differences in Naturalistic Scene-Viewing in Individuals with Genetic Variations Linked to Autism** Jeff Mentch, Caroline E. Robertson

**36.426 Pupil response trajectories as an index of visual processing across the autism phenotype** Antoinette Sabatino DiCriscio, Yirui Hu, Vanessa Troiani

**36.427 Visual temporal integration windows in 2-year-old toddlers with and without ASD** Julie Freschl, David Melcher, Alice Carter, Sangya Dhungana, Zsuzsa Kaldy, Erik Blaser

**36.428 Motion sensitivity and perceptual decision making in developmental dyslexia** Gabrielle O'Brien, Sung Jun Joo, Jason Yeatman

**36.429 Action Video Games Improve Multi-sensory Perceptual Noise-Exclusion in Developmental Dyslexia** Simone Gori, Sara Bertone, Sandro Franceschini, Andrea Facoetti

**36.430 Selective loss of fMRI response to sustained chromatic stimuli in the Parvocellular Layers of the LGN and the Superficial Layer of the SC of Unilateral Adult Amblyopia** Yue Wang, Wen Wen, Hong Liu, Peng Zhang

**36.431 Intuitive psychophysics: designing new tests of contrast sensitivity, eye movements, and visual field asymmetry for children with cerebral visual impairment** Scott W.J. Mooney, N. Jeremy Hill, Nazia M. Alam, Glen T. Prusky

**36.432 Multisensory Perception for Action in Newly Sighted Individuals** Marc O. Ernst, Irene Senna, Sophia Pfister

**36.433 Visual cortex connectivity variability in congenitally blind individuals** Ella Striem-Amit, Smadar Ovadia-Caro, Ningcong Tong, Xiaoying Wang, Yanchao Bi, Alfonso Caramazza

**36.434 Psychophysical Assessment of Contrast Sensitivity Functions in Surface and Hybrid Mexican Tetras** Ashley Rohacek, Brittany Smith, Amy Lindsey

**36.435 Spatial and Temporal Visual Perception of Infantile Nystagmus** Avital Moshkovitz, Inbal Ziv, Maria Lev, Uri Polat

## Scene Perception: Places, spatial structure, navigation, affordances

Sunday, May 19, 2:45 - 6:45 pm, Pavilion

**36.436 When a phone in a basket looks like a knife in a cup: Perception and abstraction of visual-spatial relations between objects** Alon Hafri, Barbara Landau, Michael F Bonner, Chaz Firestone

**36.437 Hole-in-the-wall: Perception of 3D shape and affordances from static images in humans and machines** Thomas S Wallis, Marlene Weller, Christina M Funke, Matthias Bethge

**36.438 Reachable or Not? Perceptual judgments of reachability along the object-scene continuum** Jeongho Park, Emilie Josephs, Talia Konkle

**36.439 Large-scale neural dissociations between views of objects, scenes, and reachable spaces** Emilie L Josephs, Talia Konkle

**36.440 Scene feature preferences found in scene selective cortex** Elissa Aminoff, Howard Hughes

**36.441 What lies beyond: Representations of the connectivity structure of the local environment** Rachel C Metzgar, Michael F Bonner, Russell A Epstein

**36.442 Scene semantics outperform center bias during scene memorization, image saliency models do not** Taylor R. Hayes, John M. Henderson

**36.443 A scene with an invisible wall - Does navigation experience influence scene perception?** Shi Pui Li, Zhengang Lu, Soojin Park

**36.444 Learning to Integrate Egocentric and Allocentric Information using a Goal-directed Reward Signal** Arthur W Juliani, Joseph P Yaconelli, Margaret E Sereno

**36.445 Representation of scene navigability and structure in two distinct cortical pathways** Yoonjung Lee, Soojin Park

**36.446 A voxel-wise encoding model for VR-navigation maps view-direction tuning at 7T-fMRI** Matthias Nau, Tobias Navarro Schröder, Markus Frey, Christian F. Doeller

**36.447 Why Uber Drivers Scare You: Detecting Road Hazards With Peripheral Vision** Benjamin A Wolfe, Ruth Rosenholtz

## Temporal Processing: Duration

Sunday, May 19, 2:45 - 6:45 pm, Pavilion

**36.448 Time after time: Repeated failure to support the space/time claims of Casasanto and Boroditsky (2008)** Shelby N Billups, Augustin Burchell, Elisabeth A Gillham, Maya Smith, Frank H Durgin

**36.449 Duration of a time interval is perceived longer when you know when it ends** Seonggyu Choe, Oh-Sang Kwon

**36.450 Time (The 'Audiovisual Rulez' Remix)** Simon J Cropper, Liheng W Xu, Aurelio M Bruno, Alan Johnston

**36.451 Effects of the irrelevant duration information on duration perception** Hitomi Kawahara, Yuko Yotsumoto

**36.452 Ensemble perception for durations of visual stimuli** Teruaki Kido, Yuko Yotsumoto

**36.453 Object substitution occurs when a masker and a target are presented to different eyes** Tomoya Nakamura, Sofia Lavrenteva, Ikuya Murakami

**36.454 Association between temporal perception and pupillary response in Red/Blue stimuli** Yuya Kinzuka, Fumiaki Sato, Tetsuto Minami, Shigeki Nakauchi

**36.455 Motor adaptation affects perception of time and numerosity** David Burr, Giovanni Anobile, Irene Togoli, Nicola Domenici, Roberto Arrighi

## Motion: Models, neural mechanisms

Sunday, May 19, 2:45 - 6:45 pm, Pavilion

**36.456 A motion aftereffect induced without motion: spatial, temporal and binocular properties, and a computational model** Mark A Georgeson, George Mather

**36.457 Adaptation-induced changes to the 'intrinsic' occipital alpha rhythm** Wiremu D Hohaia, Alan Johnston, Kielan Yarrow, Derek H Arnold

**36.458 Top-down Influence of Global Motion Patterns on Local Motion Patterns** Darwin Romulus, Sang W Hong, Howard Hock

**36.459 Decoding of retinal motion signals by cells in macaque MT** Ramanujan T. Raghavan, J. Anthony Movshon, E. J. Chichilnisky

**36.460 Centre-surround Suppression of Contrast through the Form and Motion Pathways** Daisy J Phillips, Thomas J McDougall, David R Badcock

**36.461 Neural, functional, and aesthetic impact of spatially heterogeneous (multistable) flicker** Melisa Menciloglu, Marcia Grabowecky, Satoru Suzuki

**36.462 Temporal dynamics in MT during motion discrimination with varied temporal weighting strategies** Aaron J Levi, Alexander C Huk

**36.463 Apparent motion of double drift target originates from physical location at short delays but from closer to perceived location at longer delays** Jiahua Hui, Peng Zhang, Sheng he, Peter Ulric Tse, Patrick Cavanagh

**36.464 Activity in human visual areas reflects the precision of motion perception** Andrey Chetverikov, Janneke F.M. Jehee

**36.465 Evidence from amblyopia for shared processing of motion perception and stereopsis** Arijit Chakraborty, Farnaz Javadian, Laurie M. Wilcox, Deborah Giaschi

**36.466 Enhanced auditory segregation in early blind individuals** Jasmine F Awad, Woon Ju Park, Ione Fine

**36.467 Theoretical predictions of the perceived motion-direction of same-spatial-frequency plaids** George Sperling, Dantian T. Liu, Peng Sun, Ling Lin

**36.468 Dynamic non-linear interactions serving speed estimation inferred from channel interactions during ocular following** Guillaume S Masson, Nikos Gekas, Andrew I Meso, Claudio Simoncini, Pascal Mamassian

**36.469 Motion Integration and Disambiguation concerted by Feedforward-Feedback Interactions of V1-MT-MSTl** Maximilian P.R. Löhr, Daniel Schmid, Heiko Neumann

**36.470 The construction of global shape with the Tusi and Not-Tusi configurations** Arthur Shapiro, Alex Rose-Henig

**36.471 Exploring how distance and duration information contributes to speed change discrimination** Abigail RI Lee, Justin M Ales, Julie M Harris

**36.472 Human sensitivity to task-relevant features in speed discrimination** Benjamin M Chin, Johannes Burge

# MONDAY MORNING TALKS

## Attention: Models, neural mechanisms

Monday, May 20, 8:15 - 9:45 am, Talk Room 1

Moderator: Diane Beck

41.11, 8:15 am **Layer-specific modulation of top-down spatial attention in human early visual cortex** Peng Zhang, Chengwen Liu, chencan Qian, Zihao Zhang, Sheng He, Yan Zhuo

41.12, 8:30 am **A TMS-EROS investigation of the role of feedback to early visual cortex in visual awareness.** Ramisha Knight, Gabriele Gratton, Monica Fabiani, Diane M Beck

41.13, 8:45 am **Pre-stimulation alpha phase/power and gamma power modulate the strength of feedback and feedforward in human visual areas** Lu Shen, Biao Han, Qi Chen, Rufin VanRullen

41.14, 9:00 am **Biased neural coding of feature-based attentional priority along the visual hierarchy** Mengyuan Gong, Taosheng Liu

41.15, 9:15 am **Attention is a prerequisite for the neural effects of perceptual predictions** David Richter, Floris P. de Lange

41.16, 9:30 am **Pulvinar modulation of the contrast response function of cortical neurons along the ventral pathway** Christian Casanova, Bruno Oliveira Ferreira de Souza, Cortes Nelson

## Object Recognition: Reading, domain-specific expertise

Monday, May 20, 10:45 am - 12:15 pm, Talk Room 1

Moderator: Geoffrey Boynton

42.11, 10:45 am **Domain-specific experience determines individual differences in holistic processing** Isabel Gauthier, Kao-Wei Chua

42.12, 11:00 am **Linking occipital callosal white matter to cortical responses and reading skill** Elizabeth Huber, Emily C Kubota, Jason D Yeatman

42.13, 11:15 am **A precursor of reading: Neural responses to letters strings in the untrained primate inferior temporal cortex predict word recognition behavior** Rishi Rajalingham, Kohitij Kar, Sachi Sanghavi, Stanislas Dehaene, James J DiCarlo

42.14, 11:30 am **Visually driven reading deficits: The role of object perception and visual attention** Heida M Sigurdardottir, Alexandra Arnardottir, Eydis T Halldorsdottir, Hilma R Omarsdottir, Anna S Valgeirsdottir

42.15, 11:45 am **Word and face recognition in posterior stroke - behavioural patterns and lesion lateralization** Randi Starrfelt, Ro J Robotham, Sheila J Kerry, Grace E Rice, Matthew A Lambon Ralph, Alex P Leff

42.16, 12:00 pm **Parallel spatial channels for word recognition converge at a bottleneck in anterior word-selective cortex** Alex L White, John Palmer, Geoffrey M Boynton, Jason D Yeatman

## Object Recognition: Models, neural mechanisms

Monday, May 20, 8:15 - 9:45 am, Talk Room 2

Moderator: Biyu He

41.21, 8:15 am **Revealing the behaviorally-relevant dimensions underlying mental representations of objects** Martin N Hebart, Charles Y Zheng, Francisco Pereira, Chris I Baker

41.22, 8:30 am **Unique contributions of skeletal structure for object recognition in the visual system** Vladislav Ayzenberg, Frederik S Kamps, Daniel D Dilks, Stella F Lourenco

41.23, 8:45 am **The representation of simultaneously-presented multiple categories in category-selective cortex** Libi Kliger, Galit Yovel

41.24, 9:00 am **Scene Clutter and Attention Differentially Affect Object Category and Location Representations** Monika Graumann, Caterina Ciuffi, Radoslaw M Cichy

41.25, 9:15 am **A dual role of spontaneous neural activity in object recognition** Ella Podvalny, Matthew W Flounders, Leana E King, Tom Holroyd, Biyu J He

41.26, 9:30 am **Low-frequency oscillations track the contents of visual perception and mental imagery** Siying Xie, Daniel Kaiser, Polina Iamshchinina, Radoslaw Cichy

## Multisensory Processing

Monday, May 20, 10:45 am - 12:15 pm, Talk Room 2

Moderator: Shinsuke Shimojo

42.21, 10:45 am **Visual Judgements of Grasp Optimality** Guido Maiello, Marcel Schepko, Lina K Klein, Vivian C Paulun, Roland W Fleming

42.22, 11:00 am **The Ventriloquist Illusion in the Blind with Retinal Prostheses: Are Auditory-Visual Interactions Restored After Decades of Blindness?** Noelle R B Stiles, Vivek R. Patel, James D. Weiland

42.23, 11:15 am **Spatiotemporal neural representations in high-level visual cortex evoked from sounds** Matthew X Lowe, Yalda Mohsenzadeh, Benjamin Lahner, Santani Teng, Ian Charest, Aude Oliva

42.24, 11:30 am **Vision in the Extreme Periphery (1a): Auditory Modulation of Flicker Perception** Shinsuke Shimojo, Daw-An J Wu, Kensuke Shimojo, Eiko Shimojo, Takashi Suegami, Mohammad Shehata, Noelle R Stiles, Christopher C Berger, Armand R Tanguay, Jr.

42.25, 11:45 am **Are you the sort of person who would like this? Quantifying the typicality of aesthetic taste across seeing and hearing** Yi-Chia Chen, Andrew Chang, Monica Rosenberg, Brian Scholl, Laurel J. Trainor

42.26, 12:00 pm **Motor and vestibular self-motion signals drive perceptual alternations of opposed motions in binocular rivalry** David Alais, Chris Paffen, Robert Keys, Hamish MacDougall, Frans Verstraten

# MONDAY MORNING POSTERS

## 3D Perception: Models, mechanisms

Monday, May 20, 8:30 am - 12:30 pm, Banyan Breezeway

### 43.301 Monocular depth discrimination in natural scenes:

**Humans vs. deep networks** Kedarnath Vilankar, Hengchao Xiang, Krista Ehinger, Wendy Adams, Erich Graf, James Elder

### 43.302 Optimal spatial integration: How to pool local estimates into a global percept

Seha Kim, Johannes Burge

### 43.303 A Realistic Cue Combination Rule for Multi-Cue Depth Perception

Christopher W Tyler

### 43.304 TMS induced slowing of pursuit and depth from motion parallax

Mark Nawrot, Andrew Heinz, Shanda D Lauer, Jeffrey S Johnson

### 43.305 Neural correlates of contextually modulated depth perception

Nicole Wong, Dorita H.F. Chang

### 43.306 Contribution of stereopsis and motion parallax to fear response in the pit room environment

Siavash Eftekharifar, Nikolaus Troje

### 43.307 Generalized representation of shapes from different cues in parts of IPS areas

Zhen Li, Hiroaki Shigemasa

### 43.308 Characterizing a snapshot of perceptual experience

Michael A Cohen, Caroline Ostrand, Nicole Frontero

### 43.309 Does experience of stereoblindness change use of texture cues in slant perception?

Pin Yang, Zhongting Chen, Jeffrey Allen Saunders

### 43.310 The face narrowing caused by the Mona Lisa effect

Marie Morita, Yoshitaka Fujii, Takao Sato

## Perception and Action: Walking, driving, navigating

Monday, May 20, 8:30 am - 12:30 pm, Banyan Breezeway

### 43.311 The span of visible terrain for walking over multiple raised obstacles

Brett Fajen, Scott T Steinmetz, Mark J Uszacki, Sean L Barton, Gabriel J Diaz

### 43.312 A role for stereopsis in walking over complex terrains

Kathryn Bonnen, Jonathan S Matthis, Agostino Gibaldi, Martin S Banks, Dennis Levi, Mary Hayhoe

### 43.314 Both optical expansion and depth information are used to control 2D pedestrian following

Gregory C Dachner, William H Warren

### 43.315 Retinal optic flow and the control of locomotion

Jonathan Samir Matthis, Karl S Muller, Mary M Hayhoe

### 43.316 The role of optic flow and visual direction in locomotion

Daniel P Panfili, Jonathan Samir Matthis, Mary M Hayhoe

### 43.317 Invisible social space alters human walking behaviours

Chen Zhou, Ming-Cheng Miao, Yi-Fei Hu, Shu-Guang Kuai

### 43.318 How do people drive a car to cross a road intersection between incoming vehicles?

Huaiyong Zhao, Dominik Straub

### 43.319 The Influence of Space Semantics on Navigational Choices in Virtual Settings

Serena De Stefani, Davide Schaumann, Xun Zhang, Jacob Feldman, Mubbasir Kapadia

### 43.320 Spatial learning from navigation in a virtual environment: effect of previewing a top-down map

Jie Ding, Jeffrey A Saunders

### 43.321 Effects of degraded vision on the use of landmarks in spatial learning

Holly C Gagnon, Erica M. Barhorst-Cates, Sarah H. Creem-Regehr

### 43.322 Where did I park my car? Influence of visual landmark permanency on navigation

Charlotte E. Roy, Dennis Wiebusch, Marc O. Ernst

## Faces: Expressions, speech

Monday, May 20, 8:30 am - 12:30 pm, Banyan Breezeway

### 43.323 Discrimination of facial expressions and pain through different viewing distances

Isabelle Charbonneau, Joël Guérette, Caroline Blais, Stéphanie Cormier, Fraser Smith, Daniel Fiset

### 43.324 Spatial frequencies underlying the detection of basic emotions and pain

Joël Guérette, Isabelle Charbonneau, Caroline Blais, Stéphanie Cormier, Daniel Fiset

### 43.325 The Peripheral View Melts Facial Emotion into a Blur: Investigating the Role of Spatial Frequency in Younger and Older Adults' Peripheral Emotion Detection

Andrew Mienaltowski, Alyssa R Minton, Connor Rogers, J. Farley Norman

### 43.326 The discrimination ability of human visual system for facial expression, identity and gender

Hui Zhang, Zixiang Wei, Xueping Wang, Yunhong Wang

### 43.327 The importance of stimulus variability when studying face processing using Fast Periodic Visual Stimulation: A novel 'Mixed-Emotions' paradigm

Rebecca Brewer, Michel-Pierre Coll, Jennifer Murphy, Caroline Catmur, Geoffrey Bird

### 43.328 Natural brief facial expression changes detection at a single glance: evidence from Fast Periodic Visual Stimulation

Stéphanie Matt, Milena Dzhelyova, Louis Maillard, Joëlle Ligezzolo-Alnot, Bruno Rossion, Stéphanie Caharel

### 43.329 The Neural Underpinning of Abstracting Emotion from Facial Expressions

Yi-Chen Kuo, Ya-Yun Chen, Gary C.-W. Shyi

### 43.330 The acute effects of intranasal oxytocin on EEG mu responses to emotional faces

Laila E Huggass, Ariane Price, Eveline Mu, David P Crewther

### 43.331 Visual context in emotion recognition is more powerful, prevalent and efficient than we thought

Zhimin Chen, David Whitney

### 43.332 Investigating the contribution to emotional response of facial information in the context of natural scenes

Cristina-Bianca Denk-Florea, Professor Frank Pollick

### 43.333 The effect of auditory semantic cues on face expression processing: An EEG investigation

Anna Hudson, Heather Henderson, Roxane Itier

### 43.334 Dorsal face-movement and ventral face-form regions are functionally connected during visual—speech recognition

Kamila Borowiak, Katharina von Kriegstein

### 43.335 The relationship between facial speech cues and vocal tract configuration

Alan Johnston, Christopher Scholes, Ben B Brown, Jeremy Skipper

## Perceptual Learning: adaptation, neural mechanisms

Monday, May 20, 8:30 am - 12:30 pm, Banyan Breezeway

- 43.336 **The transfer of perceptual learning to a physically and orientation different stimulus requires triple training** Jun-Yun Zhang, Guo-Zhen Liu, Cong Yu
- 43.337 **Adaptive Changes in the Visuocortical Contrast Response to Spatial Frequency Stimuli: Dissociation Between Alpha-band Power and Driven Oscillations.** Wendel M Friedl, Andreas Keil
- 43.338 **Rapid reorganization in the adult human primary visual cortex following non-invasive and reversible visual cortical deprivation in healthy subjects** Yaseen A Jamal, Daniel D Dilks
- 43.339 **Sharpness discrimination as an effective perceptual training task for presbyopia** Suraiya Jahan Liza, Liana Nafisa Saftari, Hyun-Jun Jeon, Oh-Sang Kwon
- 43.340 **Single-session expertise training leads to competition between object and face representations in visuo-cortical processing** Gabriella Silva, Lisa S Scott, Andreas Keil
- 43.341 **Seeing, fast and slow: effects of processing time on perceptual bias** Ron Dekel, Dov Sagi
- 43.342 **Extensive training with feedback reduces attentional demand in visual feature binding** Yoko Higuchi, Naotsugu Tsuchiya, Ryota Kanai, Kazuhisa Shibata
- 43.343 **Different types of response feedback in perceptual training are necessary to improve the detection of different types of breast cancer** Sebastian M Frank, Andrea Qi, Daniela Ravasio, Yuka Sasaki, Eric Rosen, Takeo Watanabe
- 43.344 **The influence of self-construal priming on visual perceptual learning** Stephanie Yoke Ping Chua, Panagiotis Rentzelas, Zoe Kourtzi, Maxine Lintern, Eirini Mavritsaki
- 43.345 **Effects of Daily Training Amount on Visual Perceptual Learning** Yongqian Song, Nihong Chen, Fang Fang
- 43.346 **Individual differences in learning: Relations between cognition, personality, and responsiveness to perceptual training** Aaron K Cochrane, C. Shawn Green
- 43.347 **Ultra-high field imaging of perceptual learning in the human visual cortex** Ke Jia, Elisa Zamboni, Nuno Reis Goncalves, Catarina Rua, Valentin Kemper, Guy Williams, Chris Rodgers, Zoe Kourtzi
- 43.348 **Using Closed-Loop Real-Time fMRI Neurofeedback to Induce Neural Plasticity and Influence Perceptual Similarity** Marius Cătălin Iordan, Victoria J. H. Ritvo, Kenneth A. Norman, Nicholas B. Turk-Browne, Jonathan D. Cohen
- 43.349 **Statistical learning enables implicit subadditive predictions** Yu Luo, Jiaying Zhao
- 43.350 **Visuo-motor adaptation during interaction with a user-adaptive system** Priscilla Balestrucci, Marc O. Ernst
- 43.351 **Decrease of the tilt illusion effect through perceptual learning** Nari Jeong, Soojin Lee, Kyou Dong Lee, Hoon Choi
- 43.352 **Direction selective habituation of motion adaptation** Xue Dong, Min Bao
- 43.353 **Visual representations outside of conscious awareness can support sensory preconditioning** Cody A Cushing, Mouslim Cherkaoui, Mitsuo Kawato, Jesse Rissman, Hakwan Lau
- 43.354 **Unitization of audio-visual conjunctions is reflected by shifts in processing architecture** Jackson C Liang, Layan A Elfaki, Morgan D Barense

43.355 **Learning to calibrate age estimates** Jordan W Suchow, Thomas L Griffiths

## Scene Perception: Cortical coding, neural mechanisms, neural networks

Monday, May 20, 8:30 am - 12:30 pm, Banyan Breezeway

- 43.356 **Adaptation to the Amplitude Spectrum Slope of Natural Scenes in Modified Reality** Bruno Richard, Patrick Shafto
- 43.357 **Assessing the similarity of cortical object and scene representations through cross-validated voxel encoding models** Nicholas M. Blauch, Filipe De Avila Belbute Peres, Juhi Farooqui, Alireza Chaman Zar, David Plaut, Marlene Behrmann
- 43.358 **Organization of population receptive fields in the parahippocampal place area** Charlotte A Leferink, Claudia Damiano, Dirk B Walther
- 43.359 **The neural basis of local contour symmetry in scene perception** John D Wilder, Morteza Rezanejad, Kaleem Siddiqi, Allan Jepson, Sven Dickinson, Dirk B Walther
- 43.360 **Neural coding of non-visual properties inferred from images of natural scene** Yaelan Jung, Dirk B Walther
- 43.361 **Task demands flexibly change the dynamics of feature use during scene processing** Bruce C Hansen, Michelle R Greene
- 43.362 **Early electrophysiological correlates of scene perception are sensitive to inversion** Assaf Harel, Hamada Al Zoubi
- 43.363 **Seeing the world from above: Uncovering the neural basis of aerial scene recognition** Joseph D Borders, Bethany M Dennis, Birken Noesen, Assaf Harel
- 43.364 **Explaining Scene-selective Visual Area Using Task-specific and Category-specific DNN Units** Kshitij Dwivedi, Michael F Bonner, Gemma Roig
- 43.365 **Adversarial examples influence human visual perception** Gamaleldin F Elsayed, Shreya Shankar, Brian Cheung, Nicolas Papernot, Alexey Kurakin, Ian Goodfellow, Jascha Sohl-Dickstein

## Motion: Biological

Monday, May 20, 8:30 am - 12:30 pm, Banyan Breezeway

- 43.366 **Spatiotemporal characteristics of cortical responses to biological motion** Dorita H. F. Chang, Nikolaus F. Troje, Hiroshi Ban
- 43.367 **How the Brain Learns to See Biological Motion After Recovering from Visual Deprivation** Shlomit Ben-Ami, Nikolaus F. Troje, Pawan Sinha
- 43.368 **Social Threat Perception from Body Movements** Akila Kadambi, Hongjing Lu
- 43.369 **Perception of continuous movements from causal actions** Yujia Peng, Nicholas Ichien, Hongjing Lu
- 43.370 **Connectivity in cortex sensitive to biological motion in those high and low in autistic tendency.** David P Crewther, Svjetlana Vukusic
- 43.371 **Can two-stream convolutional neural networks emulate human perception of biological movements?** Hannah Lee, Yujia Peng, Tianmin Shu, Hongjing Lu

## Perceptual Organization: Ensemble coding, summary statistics

Monday, May 20, 8:30 am - 12:30 pm, Pavilion

- 43.401 **Independent and parallel visual processing of mean, variance, and numerosity: Evidence from dual tasks** Vladislav A Khvostov, Igor S Utochkin

**43.402 Adaptation to mean and variance: interrelationships between mean and variance representations in orientation perception** Jinhyeok Jeong, Sang Chul Chong

**43.403 Variance modulates temporal weighting during integration of sequentially presented visual ensembles** Omer Daglar Tanrikulu, Andrey Chetverikov, Arni Kristjánsson

**43.404 The Perceptual Experience of Orientation Variability** Jessica K Witt

**43.405 Independent Processing of Statistical Summary Representations of Size and Orientation Features** Harun Yoruk, Aysecan Boduroglu

**43.406 Patterns in noise: identifying Markov processes generating events and using them to predict future events** Maria F Dal Martello, Dana Pietralla, Federico Bozzolan, Laurence T Maloney

**43.407 The Contents of Visual Working Memory Bias Ensemble Perception** Ryan S Williams, Jay Pratt, Susanne Ferber, Jonathan S Cant

**43.408 Ensemble Perception of Holistic Faces During Failed Change Localization** Shuchen Liu, Allison Yamanashi Leib, Azin Mirzaagha, Julie Liu, David Whitney

**43.409 Extrapolation of concealed ensemble motion** Matthew S Cain, Dawn M Wendell

**43.410 Holistic Ensemble Perception** Linfeng Han, Allison Yamanashi Leib, Danielle Budish, David Whitney

**43.411 Variability discrimination between heterogeneous luminance ensembles** Eiji Kimura, Yusuke Takano

**43.412 Irrelevant ensemble information may successfully be ignored... sometimes** Delaney McDonagh, Jason Haberman

**43.413 Spatial sampling in ensemble perception of hue** Lari Virtanen, Maria Oikkonen, Toni P Saarela

**43.414 Interference between summary representations of average and range in ensemble perception** Dilakshan Srikanthan, Marco A Sama, Adrian Nestor, Jonathan S Cant

**43.415 Size-distance rescaling in the ensemble representation of variance** Natalia A. Tiurina, Yuri A. Markov, Igor S. Utochkin

**43.416 Investigating the contribution of shape and surface properties in ensemble face processing** Adile Nexha, Marco A. Sama, Adrian Nestor, Jonathan S. Cant

**43.417 Ensemble Coding of Facial Attractiveness is Largely Driven by the High Spatial Frequency Information** Haojiang Ying, Wenxuan Cheng, Hong Xu

**43.418 The Effect of the Ensemble Average of Facial Expressions on Subsequent Facial Expression Recognition** Kazusa Minemoto, Yoshiyuki Ueda, Sakiko Yoshikawa

**43.419 The Positional Effect in the Diffusion of Individual Attractiveness Within a Group** Hwagyeong Jeong, Misong Kim, Sohee Jang, Hoon Choi

**43.420 Change blindness from serial dependence** Mauro Manassi, David Whitney

**43.421 Retinotopic serial dependency in visual perception** Therese Collins

## 3D Perception: Shape

Monday, May 20, 8:30 am - 12:30 pm, Pavilion

**43.422 Perception of 3D slant from textures with and without aligned spectral components** Jeffrey A Saunders, Zhongting Chen

**43.423 Contextual influences on shape perception** Elise J. Garmon, Nicole A. Liaw, Alexander J. Bies, Kelly E. Robles, Margaret E. Sereno

**43.424 Drawing ability predicts flexibility in the use of context to accurately perceive shape** Kelly E. Robles, Rebecca Florentine, Audrey Sherman, Alexander J. Bies, Margaret E. Sereno

**43.425 The Effects of Bilateral Symmetry, Viewing Distance, and Scene Context on Apparent 3D Shape** Ying Yu, James T Todd, Alexander A Petrov

**43.426 Perceptual biases in the interpretation of non-rigid structure from motion** Ryne Choi, Jacob Feldman, Manish Singh

**43.427 The strong influence of contour geometry in Structure from Motion (SFM)** Xiaoli He, Jacob Feldman, Manish Singh

**43.428 Haptic-visual crossmodal shape matching** Farley Norman, Sydney P Wheeler, Lauren E Pedersen

**43.429 Using psiTurk to explore correlations between delusional ideation and perceiving depth-inversion illusions** Attila Farkas, Thomas Papatomas, Steven Silverstein, Hristiyan Kourtev, John Papayanopoulos, Dylan Forenzo

**43.430 Perceived distortions of 3D shapes are based on misestimates of viewpoint applied to correct mental geometry** Akihito Maruya, Qasim Zaidi

**43.431 Bulging out of the picture - or not? Oblique viewing effects on the convex-concave ambiguity.** Sylvia C Pont, Huib de Ridder

**43.432 Size Estimation of Visual Stimuli on Computer Screens** Emily L Laitin, Jessica K Witt

**43.433 Basketball Hoop Illusion Verified both Empirically and through Comic Strip Caricatures** Michael K. McBeath, Ty Y Tang

## Visual Memory: Objects, features

Monday, May 20, 8:30 am - 12:30 pm, Pavilion

**43.434 Are task-irrelevant object features stored in working memory in a hidden state?** Andrea Bocincova, Jeffrey S. Johnson

**43.435 The Interaction of Time and Depth: Visual Working Memory in Depth Across Multiple Retention Intervals** Dawn M Sarno, Mark B Neider

**43.436 Visual working memory for stimulus feature saturation** Weizhen Xie, Weiwei Zhang, Kareem Zaghloul

**43.437 Contextual Relearning Following Target Relocation in Visual Search** Elizabeth G Esser-Adomako, Patrick Mead, Shane Kelly, Matthew S Peterson

**43.438 Do we actively inhibit recently attended but no longer relevant information?** Yingtao Fu, Jiahua Yu, Rende Shui, Mowei Shen, Hui Chen

**43.439 Free-Floating Features in Visual Working Memory** Conne A George, Michael S Pratte

**43.440 Dissociating visual working memory for objects and scene layout** Anna Shafer-Skelton, Timothy F Brady

**43.441 Investigating visual free recall of highly similar and competing scene stimuli** Elizabeth H. Hall, Wilma A Bainbridge, Chris I Baker

**43.442 Incongruent Objects in Real-World Scenes Distort Visual Memory Recall** Wan Y Kwok, Wilma A Bainbridge, Chris I Baker

**43.443 Neural Mechanisms Underlying Reviewing Feature Binding of Color and Letter in Visual Working Memory** Jun Saiki, Bo-Cheng Kuo, Ya-Ping Chen, Tomoya Kawashima

**43.444 Simultaneous recall procedure reveals integrated object representations in VWM** Hirotaka Sone, Aedan Li, Keisuke Fukuda

**43.445 Eye Movements Are Required to Process Spatial Configurations in Visual Working Memory** J. David Timm, Frank Papenmeier

**43.446 Systematic biases in the representation of visual space** Sami R Yousif, Yi-Chia Chen, Brian Scholl

**43.447 Visual statistical regularities aid visual working memory of objects in a task-dependent manner** Gregory L Wade, Timothy J Vickery

## Visual Memory: Neural mechanisms 1

Monday, May 20, 8:30 am - 12:30 pm, Pavilion

**43.448 Synthesizing images with deep neural networks to manipulate representational similarity and induce representational change** Jeffrey D Wammes, Kenneth A Norman, Nicholas B Turk-Browne

**43.449 Multifaceted integration - memory for faces is subserved by widespread connections between visual, memory and social processing networks** Michal Ramot, Catherine Walsh, Alex Martin

**43.450 Deep learning fMRI classification of temporal codes during naturalistic movie viewing and memory recall** Matthew R Johnson, Thomas P O'Connell, Marvin M Chun, Marcia K Johnson

**43.451 Theory of neural coding predicts an upper bound on estimates of memory variability** Paul Bays, Robert Taylor

**43.452 Contralateral delay activity indexes the number of items stored in working memory, not the current focus of spatial attention** Tobias Feldmann-Wüstefeld, Edward K Vogel, Edward Awh

**43.453 Recall of people and places reveals regions showing distinct effects of category and familiarity in high-level cortex** Adam Steel, Edward H Silson, Alexis Kidder, Adrian W Gilmore, Chris I Baker

**43.454 Examining the effects of memory compression with the contralateral delay activity** William X Ngiam, Edward Awh, Alex O Holcombe

**43.455 Encoding of spatial working memory in virtual reality in the primate prefrontal cortex** Megan Roussy, Rogelio Luna, Lena Palaniyappan, Julio C. Martinez-Trujillo

**43.456 The contralateral delay activity tracks the storage of sequentially presented colors and letters** Sisi Wang, Jason Rajsic, Geoffrey F. Woodman

**43.457 Prioritization affects working memory precision and neural population gain** Aspen H Yoo, Alfredo Bolaños, Grace E Hal-lenbeck, Masih Rahmati, Thomas C Sprague, Clayton E Curtis

**43.458 Top-down control of spatial memory visualization in early visual cortex** Lora T Likova, Spero Nicolas, Christopher W Tyler, Kris Mineff

**43.459 Neural networks supporting input gating and output gating in visual working memory** Emily J Levin, David Badre

**43.460 Manipulating attentional priority creates a trade-off between memory and sensory representations in human visual cortex** Rosanne L Rademaker, John T Serences

**43.461 The spatiotemporal profile of diffusion MRI based measures of microstructural changes in white matter evoked by learning novel visual scenes** Cibu P Thomas, Mitchell Moyer, Brian Coleman, Philip Browning, Frank Ye, David Yu, Alexander Avram, Chris I Baker, Elisabeth A Murray

**43.462 Reference Frames for Spatial Working Memory in the Lateral Prefrontal Cortex of primates** Rogelio Luna, Megan Roussy, Stefan Treue, Julio C. Martinez-Trujillo

**43.463 Accurate Classification in Frontoparietal Network for Visually Identical Tasks at Varying Levels of Relational Abstraction** Kevin C Hartstein, David M Kraemer, Peter U Tse

**43.464 The benefits of combined brain stimulation and cognitive training: a pilot study in the elderly** Sara Assecondi, Rong Hu, Gail Eskes, Jakob Kreoker, Kim Shapiro

## Temporal Processing: Timing

Monday, May 20, 8:30 am - 12:30 pm, Pavilion

**43.465 Temporal consequences of spatial acuity reduction** Pawan Sinha, Sidney P Diamond, Frank Thorn, Sharon Gilad-Gutnick, Shlomit Ben-Ami, Sruti Raja

**43.466 Feeling the beat (and seeing it, too)** Robert Sekuler, Mercedes B Villalonga, Rachel F Sussman

**43.467 Depth from Motion Alters Radial & Rotational Motion-Defined Temporal Order Judgments** Nestor Matthews, Leslie Welch, Elena Festa, Anthony Bruno

**43.468 The temporal profile of visual encoding in the recognition of familiar objects** Roxanne Ferrandez, Martin Arguin

**43.469 Detecting time distortion in emotional context induced by visual stimuli: a new Subjective Time Adjustment paradigm** Tiziano A Agostini, Giulio Baldassi, Mauro Murgia

**43.470 Both Low and High Contrast Flicker Fusion Sensitivity Differentiate Dyslexic and Typically Developing Children** Jessica L Peters, Alyse Brown, Edith L Bavin, Sheila Crewther

**43.471 Asymmetric time perception across visual depth planes and degrees of spatial certainty** Howard P Collins, Neil W Roach, Andrew J Logan, Samantha L Strong, James Heron

**43.472 Saccades vs. Novelty: the joint influence of saccades and repetition on perceived stimulus duration.** Amirhossein Ghaderi, George Tomou, John Douglas Crawford



# TUESDAY MORNING TALKS

## Object Recognition: Convolutional neural networks

Tuesday, May 21, 8:15 - 9:45 am, Talk Room 1

Moderator: Gemma Roig

51.11, 8:15 am **Eccentricity Dependent Neural Network with Recurrent Attention for Scale, Translation and Clutter Invariance** Jiaxuan Zhang, Yena Han, Tomaso Poggio, Gemma Roig

51.12, 8:30 am **Zero-shot neural decoding from rhesus macaque inferior temporal cortex using deep convolutional neural networks** Thomas P O'Connell, Marvin M Chun, Gabriel Kreiman

51.13, 8:45 am **Enhancement of Representational Sparsity in Deep Neural Networks Can Improve Generalization** Hongjing Lu, Genady Erlikhman

51.14, 9:00 am **Inducing a human-like shape bias leads to emergent human-level distortion robustness in CNNs** Robert Geirhos, Patricia Rubisch, Jonas Rauber, Carlos R Medina Temme, Claudio Michaelis, Wieland Brendel, Matthias Bethge, Felix A Wichmann

51.15, 9:15 am **Generative adversarial networks can visualize information encoded by neurons** Katerina Malakhova

51.16, 9:30 am **Adaptation in models of visual object recognition** Kasper Vincken, Gabriel Kreiman

## Spatial Vision: Models, neural mechanisms

Tuesday, May 21, 10:45 am - 12:30 pm, Talk Room 1

Moderator: Tomas Knapen

52.11, 10:45 am **A model-based approach to link MEG responses to neuronal synchrony in visual cortex** Eline R Kupers, Noah C Benson, Jonathan Winawer

52.12, 11:00 am **The visual selectivity of the default mode network** Martin Szinte, Daniel M van Es, Tomas Knapen

52.13, 11:15 am **Local variability causes adaptive spatial integration** Takahiro Doi, Johannes Burge

52.14, 11:30 am **A Natural Experiment in Aberrant Retino-Cortical Organization** Edgar A DeYoe, Ethan Duwell, Erica N Woertz, Joseph Carroll

52.15, 11:45 am **DC-balanced filtering in pRF maps of Human Primary Visual Cortex.** Daniel G Kristensen, Kristian Sandberg

52.16, 12:00 pm **Two-photon imaging of V1 responses to complex stimulus patterns in awake macaque monkeys** Cong Yu, Nian-Sheng Ju, Shu-Chen Guan, Shi-Ming Tang

52.17, 12:15 pm **Unsupervised Neural Networks Learn Idiosyncrasies of Human Gloss Perception** Katherine R Storrs, Roland W. Fleming

## Temporal Processing

Tuesday, May 21, 8:15 - 9:45 am, Talk Room 2

Moderator: Tiziano Agostini

51.21, 8:15 am **Directional congruency effect in subjective time dilation induced by looming and receding images with implied motion** Euisun Kim, Joohee Seo, Sung-Ho Kim

51.22, 8:30 am **The duration aftereffect does not reflect adaptation to perceived duration** Chris Paffen, Jim Maarseveen, Frans AJ Verstraten, Hinze Hogendoorn

51.23, 8:45 am **Sensitivity of confidence judgments for different duration estimations** Ljubica Jovanovic, Pascal Mamassian

51.24, 9:00 am **Serial dependence in orientation perception alters perceptual templates: a classification image approach** Yuki Murai, David Whitney

51.25, 9:15 am **How do temporal mechanisms influence numerosity perception?** Andromachi Tsouli, Maarten J van der Smagt, Serge O Dumoulin, Susan F te Pas

51.26, 9:30 am **Dramatic effect of duty-cycle on brain response and motion perception** Marlene Poncet, Justin Ales

## Attention: Cues, context

Tuesday, May 21, 10:45 am - 12:30 pm, Talk Room 2

Moderator: Andrew Hollingworth

52.21, 10:45 am **Learned Distractor Rejection during Strong Target Guidance** Brad T Stilwell, Shaun P Vecera

52.22, 11:00 am **Passive Suppression of Distractors in Visual Search** Bo-Yeong Won, Joy Geng

52.23, 11:15 am **The Architecture of Interaction between Visual Working Memory and Attention: Features from Multiple Remembered Objects Produce Parallel, Coactive Guidance** Andrew Hollingworth, Brett Bahle, Daniel Thayer, J. Toby Mordkoff

52.24, 11:30 am **Eye Movement Patterns to Social and Non-social Cues in Early Deaf Adults** Claudia Bonmassar, Francesco Pavani, Cristina Caselli, Alessio Di Renzo, Wieske van Zoest

52.25, 11:45 am **Attentional (mis)guidance by a contextual memory template in early vision** Markus Conci, Artyom Zinchenko, Thomas Töllner, Hermann J. Müller, Thomas Geyer

52.26, 12:00 pm **Voluntary and involuntary attention elicit distinct biasing signals in visual cortex** Jonathan M Keefe, Viola S. Störmer

52.27, 12:15 pm **Metacognitive estimates of time during spatial orienting of attention** Samuel Recht, Vincent de Gardelle, Pascal Mamassian

# TUESDAY MORNING POSTERS

## Faces: Gaze

Tuesday, May 21, 8:30 am - 12:30 pm, Banyan Breezeway

**53.301 Looking at the preferred point of fixation mediates the composite face effect** Puneeth N Chakravarthula, Araks Ghazaryan, Miguel P Eckstein

**53.302 Link between initial fixation location and spatial frequency utilization in face recognition** Amanda Estéphan, Carine Charbonneau, Virginie Leblanc, Daniel Fiset, Caroline Blais

**53.303 Individuals with low other race effect employ a global eye movement strategy when recognizing other race faces.** Yavin Alwis, Lisa Hsi, Jason Haberman

**53.304 Visual scanning of faces, race contact, and implicit racial bias** Elizabeth S Soethe, Melissa Mildort, Eli Fennell, Arushi Sachdeva, Gizelle Anzures

**53.305 A cross-cultural comparison of face scanning strategies in infancy: screen-based paradigms and live dyadic interactions** Jen X Haensel, Mitsuhiro Ishikawa, Shoji Itakura, Nadia Neesgaard, Raffaele Tucciarelli, Tim J Smith, Atsushi Senju

**53.306 Smile and the world watches: Capture by happy gaze cues outside an attentional control set.** Lindsay Plater, Akshu Valecha, Rashmi Gupta, Jay Pratt, Naseem Al-Aidroos

**53.307 Positive and negative empathy exert different effects on the perception of neutral faces with direct and averted gaze** Sarah D McCrackin, Roxane J Itier

**53.308 Gazing into Space: Systematic biases in determining another's fixation distance from eye vergence** Alysha Nguyen, Colin Clifford

**53.309 Biases in perceived gaze direction using 3D avatars and immersive virtual reality environments.** Brynna M Koschinsky-Boffa, Diego Buitrago-Piza, Julio Martinez-Trujillo

**53.310 Unconscious pupillometry: Faces with dilated pupils gain preferential access to visual awareness.** Clara Colombatto, Brian Scholl

## Perception and Action: Arm movements

Tuesday, May 21, 8:30 am - 12:30 pm, Banyan Breezeway

**53.311 Oculomotor behavior during eye-hand coordination tasks** Tiffany Arango, Peter J Bex

**53.312 Improved motor timing enhances time perception** Jianfei Guo, Zhaoran Zhang, Dagmar Sternad, Joo-Hyun Song

**53.313 Esports Arms Race: Latency and Refresh Rate for Competitive Gaming Tasks** Joohwan Kim, Josef Spjut, Morgan McGuire, Alexander Majercik, Ben Boudaoud, Rachel Albert, David Luebke

**53.314 How spatial coding is affected by mid-level visual object properties within and outside of peripersonal space.** Harun Karimpur, Philipp Schmidt, Katja Fiehler

**53.315 Humans and Machine Learning Classifiers Can Predict the Goal of an Action Regardless of Social Motivations of the Actor** Emalie G McMahon, Charles Y Zheng, Francisco Pereira, Gonzalez Ray, Ken Nakayama, Leslie G Ungerleider, Maryam Vaziri-Pashkam

**53.316 Weight and see: vicarious perception of physical properties in an object lifting task** Andy Zhang, Sarah Cormiea, Jason Fischer

**53.317 Influence of Gaze Direction on Hand Location and Orientation in a Memory-Guided Alignment Task** Gaelle N. Luabeya, Xiaogang Yan, J. D. Crawford

**53.318 Effects of Observation on Visuomotor Generalization** Miles Martinez, Tony Wang, Joo-Hyun Song

**53.319 Compulsory social interpretation of giving but not of taking actions: Evidence from modulation of lower alpha oscillations** Jun Yin, Gergely Csibra

## Perception and Action: Affordances

Tuesday, May 21, 8:30 am - 12:30 pm, Banyan Breezeway

**53.320 Seeing what's possible: Disconnected visual 'parts' are confused for their potential 'wholes'** Chenxiao Guan, Chaz Firestone

**53.321 Processing Speed for Semantic Features and Affordances** Tyler A Surber, Mark Huff, Mary Brown, Joseph D Clark, Catherine Dowell, Alen Hajnal

**53.322 Near-hand effects are robust: Three OSF pre-registered replications of visual biases in perihand space** Morgan N Jacoby, Stephen J Agauas, Laura E Thomas

**53.323 Posture Affects Affordance Perception of Reachability in Virtual Reality** Hannah L Masoner, Joseph D Clark, Catherine J Dowell, Tyler A Surber, Alen Hajnal

**53.324 Graspable objects grab attention more than images do – even when no motor response is required** Pedro Sztybel, Michael A. Gomez, Jacqueline C. Snow

**53.325 Similarities and differences in the representation of real objects, 2-D images, and 3-D augmented reality displays: Insights from inverse multidimensional scaling** Desiree E Holler, Sara Fabbri, Jacqueline C. Snow

**53.326 Maintaining the ability to pursue moving targets during repeated interception tasks** Nathaniel V Powell, Scott T Steinmetz, Oliver W Layton, Brett R Fajen

**53.327 Does Avatar Presence Facilitate Affordance Judgments from Different Perspectives?** Morgan A Saxon, Brandon J Thomas, Jeanine K Stefanucci, Sarah H Creem-Regehr

**53.328 The activation of structure- and function-based action representations in manipulable object naming: An EEG study** Wenyuan Yu, Ye Liu, Xiaolan Fu

## Binocular Vision: Surfaces

Tuesday, May 21, 8:30 am - 12:30 pm, Banyan Breezeway

**53.329 Slant perception in the presence of curvature distortion** Jonathan Tong, Robert S Allison, Laurie M Wilcox

**53.330 The Role of Binocular Vision in Stepping over Obstacles and Gaps in Virtual Environment** Robert Allison, Jingbo Zhao

**53.331 Contrast scaling of perceived depth from disparity depends on both global surface configuration and disparity gradient** Pei-Yin Chen, Chien-Chung Chen, Christopher W Tyler

**53.332 The role of boundary contours in suprathreshold binocular perception of contrast and spatial phase** Chao Han, Wanyi Huang, Zijiang J He, Teng Leng Ooi

**53.333 Effects of context on the visual stability of depth edges in natural scenes** Zeynep Başgöze, David N White, Johannes Burge, Emily A Cooper

53.334 **Perceptual grouping disrupted by neural processing at different levels of the visual system** Emily Slezak, Steven K Shevell

53.335 **High processing load of foveal crowding affects binocular summation but can be eliminated by target's tagging** Ziv Siman-Tov, Maria Lev, Uri Polat

53.336 **An unexpected spontaneous Pulfrich phenomenon in amblyopia** Alexandre Reynaud, Robert F Hess

53.337 **The Origins of Human Complex Arithmetic Abilities: Involvement of Evolutionarily Ancient Brain Circuits** William Saban, Asael Y. Sklar, Ran R. Hassin, Shai Gabay

53.338 **How ambiguity helps to understand metaperception - Similar EEG correlates of geometry and emotion processing** Ellen Joos, Anne Giersch, Lukas Hecker, Julia Schipp, Ludger Tebartz van Elst, Juergen Kornmeier

53.339 **Resolution of multiple ambiguous feature representations: Does it depend on whether features are bound to a single object?** Ryan Lange, Steven K Shevell

53.340 **Seeing the fruit on the trees: Amplified perceptual differences from ambiguous neural representations** Jaelyn Peiso, Steve Shevell

## Scene Perception: Sets, gist, rapid categorization, temporal dynamics

Tuesday, May 21, 8:30 am - 12:30 pm, Banyan Breezeway

53.341 **The visual system precisely represents complex scene ensembles** Vignash Tharmaratnam, Jason Haberman, Jonathan S. Cant

53.342 **Perceiving Category Set Statistics On-the-fly** Shaul Hochstein, Noam Khayat, Marina Pavlovskaya, Yoram Bonne, Nachum Soroker, Stefano Fusi

53.343 **Representational form of perceptual average** MyoungAh Kim, Sang Chul Chong

53.344 **Different time courses for object individuation and estimation of object quantities** David P Melcher, Andreas Wutz

53.345 **Does the Brain's Sensitivity to Statistical Regularity Require Attention?** Evan G Center, Kara D Federmeier, Diane M Beck

53.346 **Searching for the gist of the prostate** Todd Horowitz, Melissa Treviño, Marcin Czarniecki, Ismail B Turkbey, Peter L Choyke

53.347 **Is Rapid Efficient Scene Perception Also Deep, and Does Attention Help?** Thomas Sanocki, Han Lee

53.348 **Stereopsis Improves Rapid Scene Categorization** Matt D Anderson, Wendy J Adams, Erich W Graf, James H Elder

53.349 **Priming of scene gist through sequential expectations: Both prediction and target/prime image similarity contribute to rapid scene gist categorization** Maverick E Smith, Yuhang Ma, Kenzie J Kriss, Katherine E Kolze, Lester C Loschky

53.350 **Diagnostic Objects Contribute to Late -- But Not Early-- Visual Scene Processing** Julie S. Self, Jamie Siegart, Munashe Machoko, Eton Lam, Michelle R. Greene

## Faces: Wholes, parts, features

Tuesday, May 21, 8:30 am - 12:30 pm, Banyan Breezeway

53.351 **A free and open-source toolkit of three-dimensional models and software to study face perception** Jason S Hays, Claudia Wong, Fabian Soto

53.352 **Extracting modes of variation of natural facial motion using PCA** Ben B Brown, Alan Johnston

53.353 **More Makeup, More Attractiveness? Self-applied Heavy Cosmetics Yield Higher Attractiveness Ratings than Light Cosmetics** Erick R. Aguinaldo, Jessie J. Peissig

53.354 **Hair color modulates skin appearance** Richard Russell, Carlota Batres

53.355 **Characteristics of color discrimination on a face image** Yoko Mizokami, Mako Yoshida, Kumiko Kikuchi, Yoshihisa Aizu, Hirohisa Yaguchi

53.356 **Human perception of localized skin features** Matjaz Jogan, Benjamin Serbiak, Laura Higgins

53.357 **Identity specific orientation tuning for faces revealed by morphing Angelina into Jessica** Gabrielle Dugas, Justin Duncan, Caroline Blais, Daniel Fiset

53.358 **Horizontal selectivity during face perception in the visual periphery** Matthew V Pachai, Mitchel Downham, Jennifer K E Steeves

53.359 **Right hemisphere horizontal tuning during face processing** Justin Duncan, Caroline Blais, Daniel Fiset

53.360 **Asymmetric representation of sex from body shape** Paul Downing, Marco Gandolfo

53.361 **Contextual Modulation in High-Level Vision: Evidence for a Spatial Viewpoint Illusion in the Perception of Faces** Kieran J Pang, Colin W G Clifford

53.362 **The speed of individual face recognition** Talia L Retter, Caroline Michel, Fang Jiang, Michael A Webster, Bruno Rossion

53.363 **The Speed of Demography in Face Perception** Stefan Uddenberg, Clara Colombatto, Brian Scholl

53.364 **Why does aperture viewing disrupt face perception?** Jennifer J Murphy, Katie L. H Gray, Richard Cook

53.365 **Direct Evidence that Inversion of Faces Disrupts Configurational Processing** Emily X Meschke, Irving Biederman

53.366 **Holistic processing of faces in the absence of awareness** Shiwen Ren, Hanyu Shao, Sheng He

## Visual Memory: Long term memory

Tuesday, May 21, 8:30 am - 12:30 pm, Banyan Breezeway

53.367 **A new category-based image set to study image memorability** Lore Goetschalckx, Johan Wagemans

53.368 **Recognition-induced forgetting of temporally related visual long-term memories** Yoolim Hong, Ashleigh M. Maxcey, Andrew B. Leber

53.369 **Forgetting unpleasant visual memories** Ashton Schneider, Ashleigh Maxcey

53.370 **Orienting attention within long-term memories** Nora M Roüast, Anna-Katharina Bauer, Nahid Zokaei, Anna C Nobre

53.371 **The effect of time and repeated retrieval on long-term memory representations** Maria V. Servetnik, Igor S. Utochkin

53.372 **Regularity-induced attentional biases and their mnemonic consequences** Brynn E Sherman, Nicholas B Turk-Browne

53.373 **Examining limits of encoding into visual long-term memory** D. Alexander Varakin, Derek McClellan

53.374 **Arbitrary Groupings Modulate Visual Statistical Learning** Leeland L Rogers, Su Hyoun Park, Timothy J Vickery

## Visual search: Dynamic fields, individual differences

Tuesday, May 21, 8:30 am - 12:30 pm, Pavilion

**53.401 And just like that, everybody searches optimally: how changing task irrelevant details remove individual differences in visual search** Alasdair DF Clarke, Anna Nowakowska, Amelia R Hunt

**53.402 Reduction of attentional bias through gradual signal change** Injae Hong, Min-Shik Kim, Su Keun Jeong

**53.403 Adapting target selection in dynamically changing visual scenes** Nils Bergmann, Jan Tünnermann, Anna Schubö

**53.404 Concurrent attentional template activation during preparation for multiple-colour search** Anna Grubert, Martin Eimer

**53.405 Noise and motion: A new visual search paradigm with multiple random dot kinematograms (RDks)** Dietmar Heinke, Jordan Deakin, Dominic Standage, Andrew Schofield

**53.406 Do people's visual ability skill predict search efficiency under difficult search conditions?** Jing Xu, Kirk Ballew, Alejandro Lleras, Simona Buetti

**53.407 Visual Foraging with Dynamic Stimuli** Jan Tünnermann, Anna Schubö

**53.408 When do you find the next item?: Using occluders to uncover the time course of visual foraging** Anna Kosovicheva, Jeremy M. Wolfe

**53.409 What not to look for: electrophysiological evidence that searchers prefer positive template** Jason Rajsic, Geoffrey F Woodman

**53.410 The role of executive functions in foraging throughout development** Inga M Ólafsdóttir, Steinunn Gestsdóttir, Árni Kristjánsson

**53.411 Intelligence, Impulsivity and Selective Attention have something to tell us about Hybrid Foraging performance** Adrián R. Muñoz-García, Jeremy M. Wolfe, Beatriz Gil-Gómez de Liaño

**53.412 An exploration of trait variables predicting the goal-directed control of visual attention** Molly R McKinney, Heather A Hansen, Jessica L Irons, Andrew B Leber

**53.413 Opposing effects of stimulus-driven and memory-driven attention in visual search** Koeun Jung, Suk Won Han, Yoonki Min

## Motion: Motion in depth, optic flow

Tuesday, May 21, 8:30 am - 12:30 pm, Pavilion

**53.414 Temporal integration of isolated 3D motion cues** Jake A Whritner, Thaddeus B Czuba, Lawrence K Cormack, Alexander C Huk

**53.415 Perception of Ambiguous Motion Biased by Dimensional Cues** Joshua E Zosky, Michael D Dodd

**53.416 Testing for a lingering monocular basis in 3D motion perception** Neil D Shah, Jake A Whritner, Lawrence K Cormack, Alexander C Huk

**53.417 'Explaining Away' Cue Conflicts for Motion-in-Depth** Ross Goutcher, Lauren Murray, Brooke Benz

**53.418 Functional architecture and mechanisms for 3D direction and distance in middle temporal visual area.** Thaddeus B Czuba, Lawrence K Cormack, Alexander C Huk

**53.419 Encoding- and decision-related brain activity during a motion judgment task** Peter J Kohler, Elham Barzegaran, Brandon E Davis, Anthony M Norcia

**53.420 Neural correlates of path integration during visually simulated self-motion** Constanze Schmitt, Milosz Krala, Frank Bremmer

**53.421 Temporal dynamics of heading perception and identification of scene-relative object motion from optic flow** Li Li, Mingyang Xie

**53.422 When Gravity Is Not Where It Should Be: Effects On Perceived Self-Motion** Meaghan McManus, Laurence R Harris

**53.423 Computational investigation of sparse MT-MSTd connectivity and heading perception** Oliver W Layton, Scott Steinmetz, Nathaniel Powell, Brett R Fajen

## Eye Movements: Transsaccadic vision

Tuesday, May 21, 8:30 am - 12:30 pm, Pavilion

**53.424 The role of color in transsaccadic object correspondence** Lindsey Bailey, Michaela Thordarson, Caglar Tas

**53.425 Transsaccadic prediction of real-world objects** Corinna Osterbrink, Arvid Herwig

**53.426 Spatiotopic memory is more precise than retinotopic memory in the context of natural images** Zvi N Roth, Noah J Steinberg, Elisha P Merriam

**53.427 Effects of Saccade Size, Target Position, and Allocentric Cues in Transsaccadic Motion Perception** Amanda J Sinclair, Kelsey K Mooney, Steven L Prime

**53.428 Trans-saccadic integration occurs across the visual field** Emma E.M. Stewart, Alexander C Schütz

**53.429 Transsaccadic Motion Tracking in a Time-to-Contact Task** Gloria Sun, Steven L. Prime

**53.430 Transsaccadic object updating depends on visual working memory: An fNIRS study** Kaleb T Kinder, Bret T. Eschman, Shannon Ross-Sheehy, Aaron T. Buss, Caglar A. Tas

**53.431 Functional connectivity for updating grasp plans across saccades: An fMRIa study.** Bianca R. Baltaretu, Simona Monaco, Jena Velji-Ibrahim, Gaele N. Luabeya, J. D. Crawford

## Perceptual Organization: Shapes, objects, contours, surfaces

Tuesday, May 21, 8:30 am - 12:30 pm, Pavilion

**53.432 The extrapolation effect: an illusory experience of extended feature space beyond reality** Marnix Naber, Tijn Knaap, Stefan Van der Stigchel

**53.433 Independent mechanisms for implicit ensemble learning and explicit ensemble perception?** Sabrina Hansmann-Roth, Árni Kristjánsson, David Whitney, Andrey Chetverikov

**53.434 Number and cumulative area are represented as integral dimensions** Lauren S Aulet, Colin R Jacobs, Stella F Lourenco

**53.435 Inferring transformations from shape features** Fillipp Schmidt, Yaniv Morgenstern, Roland W Fleming

**53.436 From Early Contour Linking to Perception of Continuous Objects: Specifying Scene Constraints in a Two-Stage Model of Amodal and Modal Completion** Susan B Carrigan, Philip J Kellman

**53.437 Electrophysiological investigation of posterior curvature-biased patches in monkeys** Xiaomin Yue, Sophia Robert, Marissa Yetter, Leslie G Ungerleider

**53.438 Why is contour integration impaired in schizophrenia? New insights from a cross-diagnostic parametrically varying behavioral task** Brian P Keane, Laura P Crespo, Dillon T Smith, Deanna M Barch, Michael W Cole, Bart Krekelberg, Brendon M Coughlin, Thomas V Papatthomas, Attila J Farkas, Steven M Silverstein

**53.439 Recursive Networks Reveal Illusory Contour Classification Images** Philip J Kellman, Gennady Erlikhman, Nicholas Baker, Hongjing Lu

**53.440 Age-related Differences in Edge Discrimination through Kinetic Occlusion** Benjamin A Miller, George J Andersen

**53.441 Bouba and Kiki inside objects: Sound-shape correspondence for objects with a hole** Sung-Ho Kim

**53.442 Considering the Characterization of Complex Properties of Objects** Evan N Lintz, Matthew R Johnson

**53.443 Speaking about seeing: Verbal descriptions of images reflect their visually perceived complexity** Zekun Sun, Chaz Firestone

## Color and Light: Surfaces, materials

Tuesday, May 21, 8:30 am - 12:30 pm, Pavilion

**53.444 Perceived transmittance and perceived contrast in varied checkerboards** Marianne Maertens, Guillermo Aguilar

**53.445 Visual perception of liquids: insights from deep neural networks** Jan Jaap R Van Assen, Shin'ya Nishida, Roland W Fleming

**53.446 The colors of three-dimensional transparent objects** Robert J Ennis, Katja Doerschner

**53.447 Motion generated scission of surface color from transparent layer** Zhehao Huang, Qasim Zaidi

**53.448 Effects of the Spatial Spectrum on the Perception of Reflective and Refractive Materials** Flip Phillips, J Farley Norman, James T Todd

**53.449 Refractive-index perception of thick transparent materials modulated by object motion and self-motion** Maruta Sugiura, Michiteru Kitazaki

**53.450 Online shopping and the visual perception of fabric qualities** Maarten W.A. Wijnntjes, Robert Volcic

**53.451 Lighting effects on the perception of fresh produce** Fan Zhang, Sylvia Pont

**53.452 The perceptual identification of glass** James Todd, Farley Norman

## Visual Memory: Neural mechanisms 2

Tuesday, May 21, 8:30 am - 12:30 pm, Pavilion

**53.453 Neural oscillatory processes underlying context binding in visual working memory** Qing Yu, Bradley R Postle

**53.454 Negative impacts of iron deficiency on visual category learning quantified in terms of dopaminergic status and brain energy expenditure** Michael Wenger, Rachel Sharp, Amanda McColium, Lisa De Stefano, Stephanie Rhoten, Tory Worth

**53.455 Prioritizing relevant information in visual working memory sculpts neural representations in retinotopic cortex to reduce their uncertainty** Thomas C Sprague, Aspen H Yoo, Masih Rahmati, Grace E Hallenbeck, Wei Ji Ma, Clayton E Curtis

**53.456 Spatial location does not elicit normalization in visual memory** Luis D Ramirez, Julia Schwartz, Ilona Bloem, Sam Ling, Melissa M Kibbe

**53.457 The nature of top-down signals during non-spatial working memory** Masih Rahmati, Thomas C Sprague, Kartik K Sreenivasan, Clayton E Curtis

**53.458 Attention and selection in visual working memory** Matthew F Panichello, Timothy J Buschman

**53.459 Visual-biased frontal structures are preferentially connected to multisensory working memory regions.** Abigail Noyce, Ray W. Lefco, James A. Brissenden, Sean M. Tobyn, Barbara G. Shinn-Cunningham, David C. Somers

**53.460 Time-dependent recovery of retrospectively cued information during working memory storage.** Asal Nouri, Edward Ester

**53.461 fMRI encoding model of virtual navigation** Zhengang Lu, Joshua B Julian, Russell A Epstein

**53.462 Neuronal activity in Prefrontal and Posterior Parietal Cortex Mediating Working Memory Judgments** Sihai Li, Xuelian Qi, Christos Constantinidis

**53.463 The P3b ERP component as a function of visibility, accuracy, decision, and confidence** Lara Krisst, Steven J. Luck

**53.464 Alpha power gating of early visual information inferred using an iconic memory task** Amalia Gomoiu, Roberto Cecere, Stephanie Morand, Monika Harvey, Gregor Thut

**53.465 Probing the Neurocognitive Architecture of Visual Working Memory by Enhancing Storage vs. Manipulation Abilities** Hrag Pailian, George A. Alvarez

**53.466 Classification of load in visual working memory using single-trial EEG data** Kirsten Adam, Edward Awh, Edward K. Vogel

**53.467 Categorical Target Repetition Reduces Early Contralateral Delay Activity** Ashley M Ercolino, Joseph Schmidt

**53.468 Neural indices of proactive target templates** Sage EP Boettcher, Freek van Ede, Anna C Nobre

**53.469 Decoding objects' roughness held in visual working memory** Munendo Fujimichi, Hiroyuki Tsuda, Hiroki Yamamoto, Jun Saiki



# TUESDAY AFTERNOON TALKS

## Objects and Scenes: Cortical category selectivity

Tuesday, May 21, 2:30 - 4:15 pm, Talk Room 1

Moderator: Aude Oliva

54.11, 2:30 pm **An object-topic map in primate inferotemporal cortex** Pinglei Bao, Liang She, Doris Y. Tsao

54.12, 2:45 pm **Ultra-high-resolution fMRI reveals differential representation of categories and domains across lateral and medial ventral temporal cortex** Eshed Margalit, Keith W Jamison, Kevin S Weiner, Luca Vizioli, Ruyuan Zhang, Kendrick N Kay, Kalanit Grill-Spector

54.13, 3:00 pm **Rapid onset of category-selective biases in human cortex.** Edward Ester, Jordan Camp, Tayna Latortue, Tommy Sprague, John Serences

54.14, 3:15 pm **Comparing visual object representational similarity in convolutional neural networks and the human ventral visual regions** Yaoda Xu, Maryam Vaziri-Pashkam

54.15, 3:30 pm **Representation of scene layout in human OPA is fast and invariant to surface-texture** Linda Henriksson, Marieke Mur, Nikolaus Kriegeskorte

54.16, 3:45 pm **Spatial schemata determine cortical representations of the environment** Daniel Kaiser, Jacopo Turini, Radoslaw M Cichy

54.17, 4:00 pm **Reliability-Based Voxel Selection for Condition-Rich Designs** Leyla Tarhan, Talia Konkle

## Color and Light

Tuesday, May 21, 2:30 - 4:15 pm, Talk Room 2

Moderator: Angela Brown

54.21, 2:30 pm **A neural correlate of heterochromatic brightness** Jing Chen, Karl Gegenfurtner

54.22, 2:45 pm **What is halfway between a starfish and a locomotive? Studies of the intrinsic geometric structure of Hering color-opponency.** Lindsey N Hutchinson, Angela M Brown, Delwin T Lindsey

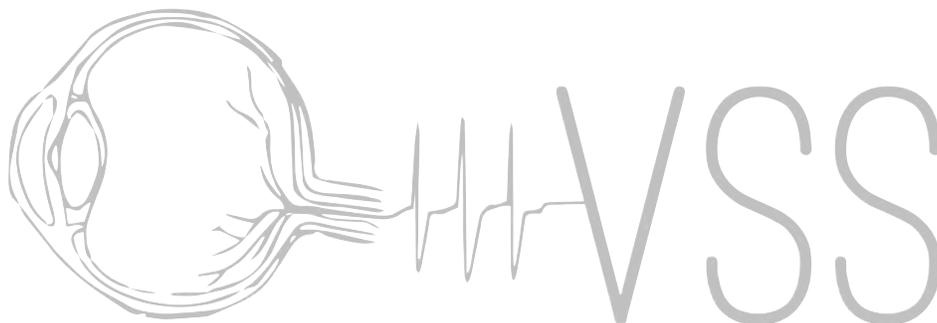
54.23, 3:00 pm **Material property space analysis for depicted materials** Mitchell van van Zuijlen, Paul Upchurch, Sylvia Pont, Maarten Wijntjes

54.24, 3:15 pm **Effects of ipRGCs and rods on color matching between object and luminous colors** Akari Kagimoto, Katsunori Okajima

54.25, 3:30 pm **Sensitivity to gloss** Jacob R. Cheeseman, Roland W. Fleming

54.26, 3:45 pm **Chocolate, chrome, or cloth? The appearance of specular highlights determines perceived material category** Alexandra C Schmid, Katja Doerschner

54.27, 4:00 pm **Investigating the influence of surface properties on reaching movements** Martin Giesel, Karina Kangur, Julie M. Harris, Constanze Hesse



**Eye Movements: Models, neural mechanisms**

Tuesday, May 21, 5:15 - 7:15 pm, Talk Room 1

Moderator: Jude Mitchell

55.11, 5:15 pm **Saccade adaptation alters smooth pursuit velocity of small, but not large objects** Scott Watamaniuk, Jeremy B Badler, Stephen J Heinen

55.12, 5:30 pm **Pupil size, locus coeruleus, emotional intensity, and eye movements during unconstrained movie viewing** Sebastiaan Mathôt, Adina Wagner, Michael Hanke

55.13, 5:45 pm **Selective peri-saccadic suppression of low spatial frequencies is a visual phenomenon** Matthias Ph Baumann, Saad Idrees, Thomas Münch, Ziad Hafed

55.14, 6:00 pm **Visual space generated by saccade motor plans** Eckart Zimmermann, Marta Ghio, Giulio Pergola, Benno Koch, Michael Schwarz, Christian Bellebaum

55.15, 6:15 pm **Consideration of eye movements reconciles behavioral and neuronal measures of contrast sensitivity** Antonino Casile, Jonathan D. Victor, Michele Rucci

55.16, 6:30 pm **Meaning maps and deep neural networks are insensitive to meaning when predicting human fixations** Marek A. Pedziwiatr, Thomas S.A. Wallis, Matthias Kümmerer, Christoph Teufel

55.17, 6:45 pm **Multiplexed allocentric and egocentric signals in the primate frontal eye fields during a cue-conflict saccade task** J Douglas Crawford, Vishal Bharmuria, Amir Sajad, Xiaogang Yan, Hongying Wang

55.18, 7:00 pm **V1 neurons tuned for high spatial frequencies show pre-saccadic enhancement** Jacob L Yates, Shanna H Coop, Jude F Mitchell

**Visual Search: Space, time**

Tuesday, May 21, 5:15 - 7:15 pm, Talk Room 2

Moderator: Anna Kosovicheva

55.21, 5:15 pm **Visual search for categorical targets is biased toward recently viewed exemplars** Brett Bahle, Andrew Hollingworth

55.22, 5:30 pm **Reliance on central vs. peripheral vision for visual search in younger and older adults** Anne-Sophie Laurin, Julie Ouerfelli-Éthier, Laure Pisella, Aarlenne Zein Khan

55.23, 5:45 pm **A novel learning-based paradigm to investigate the visual-cognitive bases of lung nodule detection** Frank Tong, Malerie G. McDowell, William R. Winter, Edwin F. Donnelly

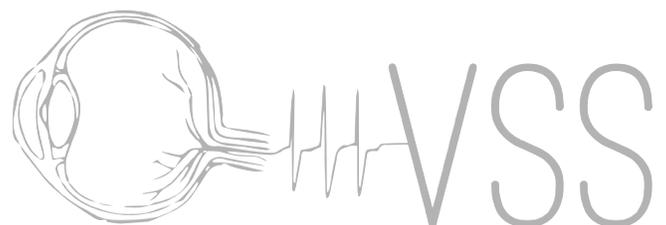
55.24, 6:00 pm **Accurately Quantifying the Subsequent Search Miss Effect in Multiple-Target Visual Search** Stephen Adamo, Patrick H Cox, Dwight J Kravitz, Stephen R Mitroff

55.25, 6:15 pm **Right time, right place: implicit learning of target onsets in a visual search task** Nir Shalev, Sage E.P. Boettcher, Anna C. Nobre

55.26, 6:30 pm **Pick up your bricks! Interactive visual search in a familiar real-world environment** Marian Sauter, Wolfgang Mack

55.27, 6:45 pm **Automatic pre-saccadic selection of stimuli perceptually grouped with saccade targets** Olga Shurygina, Arezoo Pooresmaelli, Martin Rolfs

55.28, 7:00 pm **Memory for distractors during hybrid search: The effect of target template specificity** Stephanie M Saltzman, Melissa R Beck



# TUESDAY AFTERNOON POSTERS

## Faces: Models, neural mechanisms

Tuesday, May 21, 2:45 - 6:45 pm, Banyan Breezeway

**56.301 Intersubject multivariate connectivity reveals optimal denoising strategies for visual category-specific regions** Yichen Li, Rebecca Saxe, Stefano Anzellotti

**56.302 Connectivity at the origins of domain specificity: the case of the cortical face network** Frederik S Kamps, Cassandra L Hendrix, Patricia A Brennan, Daniel D Dilks

**56.303 Electrophysiological responses to the own-face differ in magnitude and scalp topography compared to personally familiar faces and unfamiliar faces** Alison C. Campbell, James W. Tanaka

**56.304 The spatiotemporal characteristics of brain signals in race perception: Insights from a magnetoencephalography study** Sarina Hui-Lin Chien, Chun-Man Chen, Chien-Hui Tancy Kao, En-Yun Hsiung

**56.305 ERP responses to race and implicit bias in children and adults** Eli Fennell, Melissa Mildort, Elizabeth Soethe, Arushi Sachdeva, Gizelle Anzures

**56.306 Category-selective response to periodic face stimulations in natural-image sequence degrades nonlinearly with face omissions** Charles C.-F. Or, Bruno Rossion

**56.307 An EEG-based investigation of the contribution of shape and surface properties in ensemble face processing** Marco A Sama, Jonathan S Cant, Adrian Nestor

**56.308 Population receptive field measurements of stimulus-driven effects in face-selective areas** Sonia Poltoratski, Kendrick Kay, Kalanit Grill-Spector

**56.309 A Dynamic Representation of Orientation and Identity in Human Ventral Face Processing Areas as Revealed by Intracranial Electroencephalography** Arish Alreja, Michael J. Ward, R. Mark Richardson, Avniel S. Ghuman

**56.310 Typical unfamiliar face discrimination ability in anterior temporal lobe epilepsy** Angelique Volfart, Jacques Jonas, Louis Mailard, Bruno Rossion, H el ene Brissart

**56.311 Local image features dominate responses of AM and AF face patch neurons** Elena Waidmann, Kenji W Koyano, Julie J Hong, Brian E Russ, David A Leopold

**56.312 The neurons that mistook Stuart's hat for his face** Michael J Arcaro, Carlos R Ponce, Margaret S Livingstone

**56.313 How does the macaque brain characterize face pareidolia?** Jessica Taubert, Susan G Wardle, Susheel Kumar, Clarissa James, Elissa Koele, Adam Messinger, Leslie G Ungerleider

**56.314 Neural circuitry for conscious and unconscious face processing in typical subjects** Dayl n G ngora, Ana M Castro-Laguardia, Agust n Lage-Castellanos, Mitchell Vald s-Sosa, Maria A Bobes

**56.315 Spatial organization of face part representations within face-selective areas revealed by 7T fMRI** Jiedong Zhang, Peng Zhang, Sheng He

**56.316 Neural Encoding and Decoding with Convolutional Auto-encoder for Predicting Emotional Judgment of Facial Expressions** Gary C.W. Shyi, Wan-Ting Hsieh, Felix F.-S. Tsai, Jeremy C.-C. Lee, Shih-Tseng Tina Huang, Joshua O. S. Goh, Ya-Yun Chen, Chi-Chuan Chen, Yu Song Haw

**56.317 fMRI responses by face-like objects: the effect of task modulation revealed by ROI time courses, MVPA searchlight mapping, and Granger Causality.** Hsiao-Hsin Wang, Chun-Chia Kung

**56.318 fMRI mapping of retinotopy using face and object stimuli in rhesus monkeys** Adam Messinger, Benjamin Jung, Caleb Sponheim, Leslie G Ungerleider

**56.319 Causal evidence for expectancy effects in body selective cortex** Marco Gandolfo, Paul E. Downing

**56.320 Deaf individuals show enhanced face processing in the periphery** Kassandra R Lee, Elizabeth Groesbeck, O. Scott Gwinn, Fang Jiang

**56.321 Density of Top-Layer Codes in Deep Convolutional Neural Networks Trained for Face Identification** Connor J Parde, Y. Ivette Colon, Matthew Q Hill, Rajeev Ranjan, Carlos Castillo, Alice J O'Toole

**56.322 Deep networks trained to recognize facial expressions spontaneously develop representations of face identity** Kathryn C O'Neil, Rebecca Saxe, Stefano Anzellotti

## Binocular Vision: Stereopsis

Tuesday, May 21, 2:45 - 6:45 pm, Banyan Breezeway

**56.323 The neural basis of the high degree of stereoanomaly present in the normal population** Sara Alarcon Carrillo, Alex S. Baldwin, Robert F. Hess

**56.324 The prevalence and diagnosis of "stereoblindness": A best evidence synthesis** Adrien Chopin, Daphne Bavelier, Dennis M Levi

**56.325 Abnormal Sensory Eye Dominance in Stereoanomalous** Philip R. Cooper, Janine D. Mendola

**56.326 Contrast suppression and stereoblind zones in amblyopia** Saeideh Ghahghaei, Preeti Verghese

**56.327 A comprehensive depth perception model with filter/cross-correlation/filter (F-CC-F) structure** Jian Ding, Dennis M. Levi

**56.328 A model that recovers depth from stereo without using any oculomotor information** Tadamasawa Sawada

**56.329 A Computational Model for Local Stereo Occlusion Boundary Detection** Jialiang Wang, Todd Zickler

**56.330 The information value of stereopsis determines its contribution to shape constancy** Marie-Audrey Lavoie, Merc d s Aubin, Martin Arguin

**56.331 The Effect of Depth on Divided Attention in a Stereoscopic Useful Field of View Test** Jake Ellis, John P. Plummer, Ryan V. Ringer, Shivani Nagrecha, Rui Ni

## Attention: Cues, individual differences, inattentive blindness

Tuesday, May 21, 2:45 - 6:45 pm, Banyan Breezeway

**56.332 The role of color preference under interocular suppression** Albert J Zhai, Shao-Min (Sean) Hung, Shinsuke Shimojo

**56.333 Exogenous Covert Orientation of Attention to the Center of Mass** Max K Smith, Satoru Suzuki, Marcia F Grabowecky

**56.334 Exogenous attention and anticipatory fixational stability** Mariel S Roberts, Marisa Carrasco

**56.335 The Role of Attention in Amblyopic Global Form Perception** Priyanka V Ramesh, Cindy Forestal, Mark A Steele, Lynne Kiorpes

**56.336 Does endogenous attention compensate for spatial performance fields?** Simran Purokayastha, Mariel S Roberts, Marisa Carrasco

**56.337 Truly independent? Stimulus- and goal-driven orienting interact at the level of sensory processing** Mathieu Landry, Jason Da Silva Castanheira, Amir Raz

**56.338 Endogenous and exogenous control of visuospatial attention in freely behaving mice.** Wen-Kai You, Shreesh P Mysore

**56.339 Does a history of involuntary selection generate attentional biases?** Michael A Grubb, John Albanese, Gabriela Christensen

**56.340 Pedestrians on our campus use "safe enough" crossing behaviors** Bonnie Angelone

**56.341 Mind-Controlled Motion Pareidolia** Allison K. Allen, Matthew T. Jacobs, Rupsha Panda, Jocelyn Carroll, Kathleen Spears, Stephanie Chen, Nicolas Davidenko

**56.342 Subtle social cues: Does another person's body orientation direct our attention?** Carmela Gottesman

**56.343 Does everyone see the forest before the trees? An order-constrained analysis of precedence and interference effects in a hierarchical letters task.** Pieter Moors, Johan Wagemans

**56.344 Influences of Depression on Sustained Attention and Cognitive Control** Max J Owens

**56.345 Comorbidity in Anxiety and Depression Influence Neural Responses to Errors: An ERP Study** Catherine L Reed, Madison Lodge, Audrey Siqi-Liu, Morgan Berlin, Emilia Hagen, Adrienne Jo, Anthony Burre, Jackson Zeladon, Abraham Saikley, Jessica Kim, Cindy M Bukach, Jane W Couperus

**56.346 Has Social Media Altered Our Ability to Determine If Pictures Have Been Photoshopped?** Nicole A Thomas, Ellie Anilius, Alessia Mattia, Elizabeth Matthews

## Attention: Features and objects 2

Tuesday, May 21, 2:45 - 6:45 pm, Banyan Breezeway

**56.347 Attentional dynamics during physical prediction** Li Guo, Jason Fischer

**56.348 Contrasting Relational and Optimal Tuning Accounts in Attentional and Perceptual Selection** Zachary Hamblin-Frohman, Stefanie Becker

**56.349 Attribute Amnesia Reveals a Dependency on Conceptual Activation for Memory Consolidation** Michael G Allen, Timothy F Brady

**56.350 Independent attentional resources explains the object-based shift direction anisotropy** Adam J Barnas, Adam S Greenberg

**56.351 The Symmetry of Deception: Symmetrical Action Influences Awareness by Shifting Event Boundaries** Anthony S. Barnhart, Dillon Krupa, Cheyenne Duckert

**56.352 Putting spatial and feature-based attention on a shared perceptual metric** Daniel Birman, Justin L Gardner

**56.353 Development of children's capacity for multiple object tracking via multifocal attention** Tashauna L Blankenship, Roger W Strong, Melissa M Kibbe

**56.354 Neural reconstructions of attended object features using fMRI and EEG** Jiageng Chen, Emma W Dowd, Maurryce D Starks, Julie D Golomb

**56.355 Multiple-object Control Predicts Movements of Attention During Free Viewing** Yupei Chen, Gregory Zelinsky

**56.356 Crossmodal correspondences between abstract shapes and nonsense words modulate a neuronal signature of visual shape processing** Vivian Ciaramitaro, Hui Mei Chow, Erinda Morina

**56.357 Saccadic Pre-attentive Measures Provide Insight into Illusory Contour Detection in Children** Nicholas C Duggan, Emily C Blakley, Alecia Moser, Sarah Olsen, Peter Gerhardtstein

**56.358 Attentional Color Selection Depends on Task Structure** Madison Elliott, Ronald Rensink

**56.359 Surround Suppression in Attention to Spatial Frequency** Ming W.H. Fang, Taosheng Liu

**56.360 Item-based and feature-based selection in working memory** Jasper E Hajonides vd Meulen, Freek Van Ede, Mark G Stokes, Anna C Nobre

**56.361 Examining the Role of Objects versus Location in Visual Selection Using Dynamic Displays** Qingzi Zheng, Cathleen M Moore

## Attention: Neural mechanisms 1

Tuesday, May 21, 2:45 - 6:45 pm, Banyan Breezeway

**56.362 Neuronal Mechanisms of Attention Measured Through Multi-unit Recordings in LGN and V1** Makaila Banks, Abhishek Dedhe, Tanique McDonald, Brianna Carr, Marc Mancarella, Jackie Hembrook-Short, Farran Briggs

**56.363 A new method to analyze the variations of neural tuning and its application to primate V1** Xuexin Wei, Rong Zhu, Liam Paninski

**56.364 No modulation by expectation of the sensory response to object images as measured by MEG** Ying Joey Zhou, Alexis Pérez-Bellido, Saskia Haegens, Floris P de Lange

**56.365 Effects of random fluctuations in alpha oscillations on orientation detection: an EEG study** Sarah S Sheldon, Kyle E Mathewson

**56.366 The effect of eccentricity on electrophysiological markers of attention** Orestis Papaioannou, Steven J Luck

**56.367 Select, response, repeat: Electrophysiological measures of location and response repetition** Hayley EP Lagroix, Matthew D Hilchey, Jay Pratt, Susanne Ferber

**56.368 Post-stimulus, but not pre-stimulus alpha power changes track visual associative learning.** Kierstin Riels, Rafaela Campagnoli, Nina N Thigpen, Andreas Keil

**56.369 Voluntary attention modulates eye-specific neural responses without awareness of eye-of-origin information** Hongtao Zhang, Sheng He, Peng Zhang

**56.370 The effect of perceptual load on gaze and EEG signals in multi-target visual search with free eye-movements** Anthony M Harris, Joshua O Eayrs, Nilli Lavie

**56.371 Neural correlates of target enhancement** Janir R da Cruz, Ophélie Favrod, Phillip R Johnston, Patrícia Figueiredo, Michael H Herzog

## Multisensory Processing: Auditory 2

Tuesday, May 21, 2:45 - 6:45 pm, Pavilion

**56.401 Microsaccades and pupillary responses represent the focus of auditory attention** Hsin-I Liao, Haruna Fujihira, Shimpei Yamagishi, Shigeto Furukawa

**56.402 Neurophysiological responses on size perception: the influence of sound and visual adaptation.** Alessia Tonelli, Maria Bianca Amadeo, Claudio Campus, Monica Gori

**56.403 Auditory modulations on visual perception and metacognition** Da Li, Yi-Chuan Chen, Su-Ling Yeh

**56.404 Multisensory Integration of Visual and Auditory Signals during Second Language Learning** Guangsheng Liang, Vinh Nguyen, Kimi Nakatsukasa, Aaron Braver, Tommy Dang, Miranda Scolari

**56.405 Statistical learning of cross-modal correspondence with non-linear mappings** Kazuhiko Yokosawa, Asumi Hayashi, Ryotaro Ishihara

**56.406 Visual signals removed by opaque contact lens blocks alpha oscillations: Resting state EEG effects.** Joseph FX DeSouza, Nevena Savija, Rebecca Barnstaple

**56.407 Multimodal brain regions that process faces and voices** Olga A. Korolkova, Maria Tsantani, Nadine Lavan, Lúcia Garrido

**56.408 Altered Visual Processing in Migraine Not Associated with Auditory Abnormalities** Sarah M Haigh, Alireza Chamanzar, Praveen Venkatesh, Pulkit Grover, Marlene Behrmann

**56.409 Maximal Spatial Resolution Predicts Maximal Auditory Sensitivity in Human Adults** Russell Adams, Michele Mercer

## Perception and Action: Models, neural mechanisms

Tuesday, May 21, 2:45 - 6:45 pm, Pavilion

**56.410 Re-analyzing unconscious priming: Is there really an indirect task advantage?** Sascha Meyen, Iris Zerweck, Catarina Amado, Ulrike von Luxburg, Volker Franz

**56.411 Is there evidence for unconscious processing of digits?** Iris Zerweck, Sascha Meyen, Catarina Amado, Maren Klimm, Volker Franz

**56.412 Testing accuracy, additivity, and sufficiency of human use of probability density information in a visuo-cognitive task** Keiji Ota, Jakob Phillips, Laurence T Maloney

**56.413 Closed-loop vs predictive control characterized by inverse reinforcement learning of visuomotor behavior during target interception** Kamran Binaee, Rakshit S Kothari, Gabriel J Diaz

**56.414 Alpha Desynchronization is Modulated by Kinematic and Contextual Properties of the Observed Reach** Rebecca E Hailperin-Lausch, Elizabeth B daSilva, Bennett I Bertenthal

**56.415 Decision making and avoidance of multiple moving objects** Cristina de la Malla, Albert Castells, Joan López-Moliner

**56.416 How to move to catch flying balls with updating predictions** Borja Aguado, Joan López-Moliner

**56.417 Attentional updating of perceived position can account for a dissociation of perception and action** Ryohei Nakayama, Alex O. Holcombe

**56.418 Iron Deficiency Is Related to Altered Behavior After Rewards and Penalties** Lisa De Stefano, Stephanie E Rhoten, Michael J Wenger, Laili Boozary, Amy Barnett, Tory P Worth

**56.419 Ineffective single-blinding during 1mA transcranial direct current stimulation.** Gemma Learmonth, Larissa Buhôt, Lisa Möller, Robert Greinacher

**56.420 White-Matter Plasticity Following Sight-Restoration in Congenitally Blind Patients** Nathaniel P Miller, Tapan Gandhi, Pawan Sinha, Bas Rokers

**56.421 An fMRI study identifying brain regions activated when performing well-learned versus newly learned visuomotor associations** Elizabeth J Saccone, Sheila G Crewther, Melvyn A Goodale, Philippe A Chouinard

**56.422 Motion perception, form discrimination and visual motor integration abilities in mTBI patients** Mariagrazia Benassi, Davide Frattini, Roberto Bolzani, Sara Giovagnoli, Tony Pansell

**56.423 A novel approach for the assessment of population receptive field mapping results** Allan Hummer, Markus Ritter, Michael Woletz, Maximilian Pawloff, Martin Tik, Ursula Schmidt-Erfurth, Christian Windischberger

**56.424 Neural model of the visual recognition of social intent** Martin A Giese, Mohammad Hovaidi-Ardestani, Nitin Saini

## Attention: Shifting, tracking

Tuesday, May 21, 2:45 - 6:45 pm, Pavilion

**56.425 Opposing Contextual Effects of High Dynamic Range (HDR) Luminance Dynamics on Orientation Discrimination** Chou Po Hung, Paul D Fedele, Kim F Fluit, Anthony J Walker, Min Wei

**56.426 Effect of blue light on the speed of attention shift** Chien-Chun Yang, Su-Ling Yeh

**56.427 Oscillations modulate attentional search performance periodically** Garance Merholz, Rufin VanRullen, Laura Dugué

**56.428 The utility of employing accuracy-based behavioral measures, when conducting psychopharmacological research of attentional performance** Jon Lansner, Christian G. Jensen, Anders Petersen, Patrick M. Fisher, Vibe G. Frokjaer, Signe Vangkilde, Gitte M. Knudsen

**56.429 Pre-target oculomotor inhibition reflects temporal certainty** Shlomit Yuval-Greenberg, Noam Tal

**56.430 Selection from concurrent RSVP streams: attention shift or buffer read-out?** Charles J H Ludowici, Alex O. Holcombe

**56.431 TVA in action: Attention capacity and selectivity during coordinated eye-hand movements** Philipp Kreyenmeier, Nina M Hanning, Heiner Deubel

**56.432 Effects of Wider Fields-of-View on Multiple-Object Tracking** Daniel Smith, Rui Ni, Dominic Canare, Brad Weber

**56.433 Jointly perceiving physics and mind** Haokui Xu, Ning Tang, Mowei Shen, Tao Gao

**56.434 Multitasking and MOT in bilinguals** Josee Rivest, Ana Janic, Patrick Cavanagh

**56.435 Tracking multiple moving auditory targets** Lauri O Oksama, Timo Heikkilä, Lauri Nummenmaa, Jukka Hyönä, Mikko Sams

**56.436 Orienting attention based on the gaze of a dog** Tazeen Ishmam, Muna Amry, Shane Baker, D. Alexander Varakin

**56.437 The Influence of Context Representations on Cognitive Control States** Reem Alzahabi, Erika Hussey, Matthew S Cain, Nathan Ward

**56.438 Hierarchical motion structure is employed by humans during visual perception** Johannes Bill, Hrag Pailian, Samuel J Gershman, Jan Drugowitsch

**56.439 Effects of task difficulty and attentional breadth on tonic and phasic pupil size** Yavor Ivanov, Ana Lazović, Sebastiaan Mathôt

**56.440 Processing capacity for moving objects in artificial worlds** Nicole L Jardine, Steven L Franconeri

## Attention: Reward

Tuesday, May 21, 2:45 - 6:45 pm, Pavilion

**56.441 Emotional Primes Affects Global versus Local Processing Differently: The Effect of Arousal** Michaela Porubanova, Maria Kuvaldina, Andrey Chetverikov

**56.442 Learning to Attend in a Brain-inspired Deep Neural Network** Gregory J. Zelinsky, Hossein Adeli

**56.443 Physical, mental and social stress selectively modulate inhibitory control during search of natural scenes** Tom W Bullock, Mary H MacLean, Alex P Boone, Tyler Santander, Jamie Raymer, Alex Stuber, Liann Jimmons, Gold N Okafor, Scott T Grafton, Michael B Miller, Barry Giesbrecht

**56.444 Reward learning biases the direction of saccades in visual search** Ming-Ray Liao, Brian A Anderson

**56.445 Reward Experience Modulates Endogenous Attentional Cueing Effects** Chisato Mine, Jun Saiki

**56.446 Incentive Cue Related Signal Suppression in Adolescents and Adults: An EEG study** Daniel B Dodgson, Jane E Raymond

**56.447 Automatic biases of attention towards positive and negative stimuli: the role of individual differences** Ludwig P Barbaro, Marius V Peelen, Clayton M Hickey

**56.448 Watch Out - Snake! Threat Captures Attention Independent of Low-Level Features** Drew Weller, Joanna Lewis

**56.449 Association between a spatial preference toward highly rewarded locations and explicit awareness** Caitlin Sisk, Roger W Remington, Yuhong V Jiang

**56.450 The influence of hunger on visual processing of objects** Elizabeth E Kruhm, Antoinette DiCriscio, Vanessa Troiani

**56.451 Reactivation of reward-color association reduces retroactive inhibition from new learning** Zhibang Huang, Sheng Li

**56.452 EEG and fMRI Decoding of Emotional States: Temporal Dynamics and Neural Substrate** Ke Bo, Siyang Yin, Yuelu Liu, Jacob Jenkins, Andreas Keil, Mingzhou Ding

**56.453 Immersive experience of awe increases the scope of visuospatial attention: A VR study** Muge Erol, Arien Mack

## Motion: Local, higher order

Tuesday, May 21, 2:45 - 6:45 pm, Pavilion

**56.454 Embeddedness of Local Gravity in Perception & Action** Abdul H Deeb, Evan Cesanek, Fulvio Domini

**56.455 Characterizing Global Motion Perception Following Treatment for Bilateral Congenital Cataracts** Sruti Raja, Sharon Gilad-Gutnick, Shlomit Ben-Ami, Priti Gupta, Pragya Shah, Kashish Tiwari, Suma Ganesh, Pawan Sinha

**56.456 Effects of local motion ambiguity on perceptual confidence** Angela M.W. Lam, Alan L.F. Lee

**56.457 Reverse Phi: Effect of Contrast Reversals on Perceived Speed** Mohana Kuppaswamy Parthasar, Vasudevan Lakshminarayanan

**56.458 Orthogonal and parallel rebounding aftereffects produced by adaptation to back-and-forth apparent motion** Nathan H Heller, Patrawat Samermit, Nicolas Davidenko

**56.459 Manual tracking of the double-drift illusion** Bernard M 't Hart, Denise Y.P. Henriques, Patrick Cavanagh

**56.460 Aftereffects of apparent motion adaptation depends on adaptation duration** Wei Wei, Teng Leng Ooi, Zijiang J He

**56.461 Motion-Defined Form Discrimination in Human V5/MT+** Samantha L Strong, Edward H Silson, André D Gouws, Antony B Morland, Declan J McKeefry

**56.462 The history of the elements influences object correspondence in the Ternus display** Madeleine Y Stepper, Bettina Rolke, Elisabeth Hein

**56.463 Hierarchical Bayesian modeling of the psychometric function (and an example application in an experiment on correspondence matching in long-range motion).** Nicolaas Prins

**56.464 Adaptation to an illusory aspect ratio distorted by motion induced position shift** Hoko Nakada, Mizuki Kiyonaga, Ikuya Murakami

**56.465 Distance not time imposes limits on accumulation of illusory position shifts in the double-drift stimulus** Sirui Liu, Peter U. Tse, Patrick Cavanagh

**56.466 Attention filters for motion tracking** Austin Kuo, Kathryn L. Bonnen, Alexander C. Huk, Lawrence K. Cormack

**56.467 Rebounding illusory apparent motion in three dimensions using virtual reality** Benjamin P Hughes, Hunter Delattre, Nathan H Heller, Patrawat Samermit, Nicolas Davidenko

**56.468 Fast motion drags shape** Mark Wexler, Patrick Cavanagh



# WEDNESDAY MORNING TALKS

## Perception and Action: Decision making, neural mechanisms

Wednesday, May 22, 8:15 - 10:00 am, Talk Room 1

Moderator: Megan Peters

**61.11, 8:15 am Rhythmic modulation of V1 BOLD response (7T) after a Voluntary action** Maria Concetta Morrone, Alessandro Benedetto, Mauro Costagli, Michela Tosetti, Paola Binda

**61.12, 8:30 am Graded, multidimensional representations of sensory evidence allow for dissociable performance in second-choice and confidence judgments.** Tarryn Balsdon, Valentin Wyart, Pascal Mamassian

**61.13, 8:45 am Tuned normalization in perceptual decision-making circuits can explain seemingly suboptimal confidence behavior** Brian Maniscalco, Brian Odegaard, Piercesare Grimaldi, Seong Hah Cho, Michele A. Basso, Hakwan Lau, Megan A.K. Peters

**61.14, 9:00 am Speed-accuracy tradeoff heightens serial dependence** Farshad Rafiei, Dobromir Rahnev

**61.15, 9:15 am Pointing adaptation changes visual depth perception** Tatiana Kartashova, Maryvonne Granowski, Eckart Zimmermann

**61.16, 9:30 am Predictive eye and head movements when hitting a bouncing ball** David L Mann, Hiroki Nakamoto, Nadine Logt, Lieke Sikkink, Eli Brenner

**61.17, 9:45 am Action-based predictions affect visual perception, neural processing, and pupil size, regardless of temporal predictability** Bianca M van Kemenade, Christina Lubinus, Wolfgang Einhauser, Florian Schiller, Tilo Kircher, Benjamin Straube

## Visual Memory: Long term memory

Wednesday, May 22, 8:15 - 10:00 am, Talk Room 2

Moderator: John Wixted

**61.21, 8:15 am Image memorability is driven by visual and conceptual distinctiveness** Qi Lin, Sami R Yousif, Brian Scholl, Marvin M Chun

**61.22, 8:30 am Iterated learning Revealed Color-contingent Structured Priors in Visual Memory** Yang Wang, Edward Vul

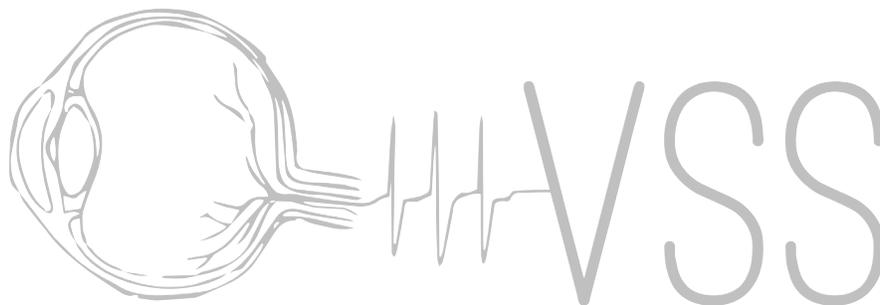
**61.23, 8:45 am Generating reliable visual long-term memory representations for free: Incidental learning during natural behavior** Dejan Draschkow, Melissa L.-H. Võ

**61.24, 9:00 am The Number of Encoding Opportunities, but not Encoded Representations in Visual Working Memory Determines Successful Encoding into Visual Long-Term Memory** Caitlin J. I. Tozios, Keisuke Fukuda

**61.25, 9:15 am Long-term spatial memory representations in human visual cortex** Serra E Favila, Brice A Kuhl, Jonathan Winawer

**61.26, 9:30 am The contributions of visual details vs semantic information to visual long-term memory** Kelvin Lam, Mark W Schurgin, Timothy F Brady

**61.27, 9:45 am The extraordinary capacity of visual long-term memory (including eyewitness memory)** John Wixted



## Perceptual Learning

Wednesday, May 22, 11:00 am - 12:45 pm, Talk Room 1

Moderator: Takeo Watanabe

**62.11, 11:00 am Orientation specificity and generalization of perceptual learning in n-AFC spatial frequency identification.** Barbara Doshier, Jiajuan Liu, Zhong-Lin Lu

**62.12, 11:15 am Increasingly complex internal visual representations in honeybees, human infants and adults** Beáta T Szabó, Aurore Avarguès-Weber, Gergő Orbán, Valerie Finke, Márton Nagy, Adrian Dyer, József Fiser

**62.13, 11:30 am Perceptual Learning Benefits From Strategic Scheduling of Passive Presentations and Active, Adaptive Learning.** Everett W Mettler, Austin S Phillips, Timothy Burke, Patrick Garrigan, Christine M Massey, Philip J Kellman

**62.14, 11:45 am An expert advantage on detection of unfamiliar patterns before and after practice** Zahra Hussain

**62.15, 12:00 pm Trans-saccadic perceptual learning of orientation discrimination is not location specific** Lukasz Grzeczowski, Heiner Deubel

**62.16, 12:15 pm A new type of long-lasting adaptation that is feature-unspecific, task-specific and occurs only in a plastic state** Andreas Marzoll, Isha Chavva, Takeo Watanabe

**62.17, 12:30 pm Learning to ignore: Neural mechanisms underlying expectation-dependent distractor inhibition** Dirk van Moorselaar, Heleen A Slagter

## Motion Perception

Wednesday, May 22, 11:00 am - 12:45 pm, Talk Room 2

Moderator: Larry Cormack

**62.21, 11:00 am An integrated neural model of robust self-motion and object motion perception in visually realistic environments** Scott T Steinmetz, Oliver W Layton, N. Andrew Browning, Nathaniel V Powell, Brett R Fajen

**62.22, 11:15 am Subjective confidence judgments for motion direction discrimination are centrally biased despite matched objective performance in the periphery** JD Knotts, Alan L.F. Lee, Hakwan Lau

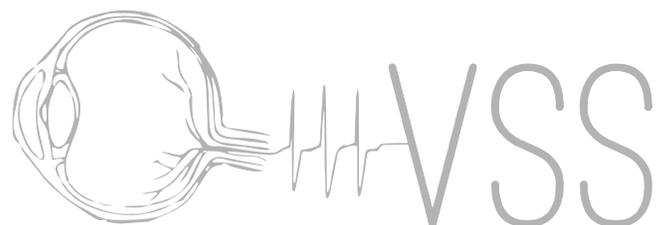
**62.23, 11:30 am Dynamics of Motion Induced Position Shifts Revealed by Continuous Tracking** Lawrence Cormack

**62.24, 11:45 am Octopuses perceive second order motion: Evidence for convergent evolution of visual systems** Marvin R Mächler, Marie-Luise Kieseler, Jade E Smith, Shae K Wolfe, Mark A Taylor, Matthew D Goff, Jean Fang, David B Edelman, Peter U Tse

**62.25, 12:00 pm Global motion identification is incredibly precise, but lowering coherence increases the probability of total identification failures** Marshall L Green, Michael S Pratte

**62.26, 12:15 pm Additivity of attractive and repulsive sequential effects in motion direction estimation** Jongmin Moon, Oh-Sang Kwon

**62.27, 12:30 pm Adaptive center-surround mechanisms in non-retinotopic processes** Boris I Penalzoza, Michael H Herzog, Haluk Ogmen



# WEDNESDAY MORNING POSTERS

## Color and Light: Adaptation, constancy, cognition, models

Wednesday, May 22, 8:30 am - 12:30 pm, Banyan Breezeway

**63.301 Colour constancy measured by achromatic adjustment in immersive illumination** Anya C Hurlbert, Gaurav Gupta, Naomi Gross, Ruben Pastilha

**63.302 Color and Brightness constancies as functions of test saturation** Adam Reeves, Kinjiro Amano

**63.303 Blue-yellow asymmetries in the perception of illuminant vs. surface color** Ivana Ilic, Jiale Yang, Masami K Yamaguchi, Katsumi Watanabe, Yoko Mizokami, Michael A Webster

**63.304 Cross-Media Colour Matching under Chromatic Lights** Jan Kučera, Gaurav Gupta, James Scott, Anya Hurlbert

**63.305 Speed limits on seeing temporal changes in daylight** Ruben C Pastilha, Gaurav Gupta, Anya Hurlbert

**63.306 Large enhancement of simultaneous color contrast by surrounding white gap, but not by black gap** Tama Kanematsu, Kowa Koida

**63.307 Neurocomputational model explains the lightness scaling of illuminated simultaneous contrast, staircase-Gelb, and scrambled Gelb displays** Michael E. Rudd

**63.308 Predicting Human Perception of Glossy Highlights using Neural Networks** Konrad E Prokott, Roland W Fleming

**63.309 Understanding Information Processing Mechanisms for Estimating Material Properties of Cloth in Deep Neural Networks** Wenyan Bi, Gaurav Kumar, Hendrikje Nienborg, Bei Xiao

**63.310 Color Constancy in Deep Neural Networks** Alban C Flachot, Heiko H Schuett, Roland W Fleming, Felix Wichmann, Karl R Gegenfurtner

**63.311 A probabilistic graphical model of lightness and lighting** Richard F Murray

**63.312 A Comparison of Two Methods of Hue Scaling** Courtney Matera, Kara J Emery, Vicki J Volbrecht, Kavita Vemuri, Paul Kay, Michael A Webster

**63.313 Developing a peripheral color tolerance model for gaze-contingent rendering** Lili Zhang, Rachel Albert, JooHwan Kim, David Luebke

**63.314 What color are cantaloupes? The role of relative color-concept associations on interpretations of information visualizations** Zachary T Leggon, Ragini Rathore, Laurent Lessard, Karen B Schloss

**63.315 Building color-concept association distributions from statistical learning** Melissa A Schoenlein, Karen B Schloss

**63.316 The trajectories of conceptual change: mouse-tracking prevalence-induced concept change** Michael Dieciuc, Walter R Boot

**63.317 The role of spatial organization for interpreting colormap data visualizations** Shannon C Sibrel, Ragini Rathore, Laurent Lessard, Karen B Schloss

## Multisensory Processing: Tactile, vestibular

Wednesday, May 22, 8:30 am - 12:30 pm, Banyan Breezeway

**63.318 Spatiotemporal mechanisms of multisensory integration** Majed J Samad, Cesare V Parise

**63.319 Everyday haptic experiences influence visual perception of material roughness** Karina Kangur, Michal Toth, Julie Harris, Constanze Hesse

**63.320 Haptic discrimination of 3D-printed patterns based on natural visual textures** Scinob Kuroki, Masataka Sawayama, Shin'ya Nishida

**63.321 Unimodal and Cross-Modal Shape Recognition** Ashley E Peterson, Farley Norman, Hannah K Shapiro, Matthew D Hall

**63.322 Visual-vestibular conflict detection is best during active head movement with scene-fixed fixation** Savannah J Halow, Jax D Skye, James Lui, Paul R Macneilage

**63.323 Impossible integration of size and weight** Isabel Won, Steven Gross, Chaz Firestone

**63.324 Perceived timing of passive self-motion relative to auditory stimuli with and without vision** William Chung, Michael Barnett-Cowan

**63.325 A virtual reality approach identifies flexible inhibition of motion aftereffects induced by head rotation** Xin He, Jianying Bai, Min Bao, Tao Zhang, Yi Jiang

**63.326 Updating the position of eccentric targets during visually-induced lateral motion** Jong-Jin Kim, Laurence R Harris

**63.327 Underwater virtual reality for spatial orientation research.** Christian B Sinnott, James Liu, Courtney Matera, Savannah Halow, Ann E Jones, Matthew Moroz, Jeff Mulligan, Michael Crognale, Eelke Folmer, Paul MacNeilage

## Eye Movements: Pursuit, vergence

Wednesday, May 22, 8:30 am - 12:30 pm, Banyan Breezeway

**63.328 Earth Gravity-Congruent Motion Benefits Pursuit Gain for Parabolic Trajectories** Björn Jörges, Joan López-Moliner

**63.329 Microsaccades, Pursuit and Drift Modulations During Smooth Pursuit** Inbal Ziv, Yoram S Bonneh

**63.330 The Quantification of Smooth Pursuit Eye Movements** Inge L Wilms

**63.331 Smooth pursuit of two-dimensional target motion: Pursuit speed varies with turning angle for predictable and unpredictable motion paths** Jie Wang, Morgan T. M. McCabe, Renee J. Tournoux, Eileen Kowler

**63.332 Effect of priors on smooth pursuit of clear and noisy random dot kinematograms** Jason F Rubinstein, Manish Singh, Eileen Kowler

**63.333 Pre-saccadic attention to motion initiates predictive ocular following** Sunwoo Kwon, Martin Rolfs, Jude F. Mitchell

**63.334 Smooth Pursuit Eye Movements in Patients with Schizophrenia and Bipolar Disorder** Roberto Bolzani, Giovanni Piraccini, Jan Ygge, Rosa P. Sant'Angelo, Roberta Raggini, Sara Garofalo, Mariagrazia Benassi

**63.335 Following Forrest Gump: Smooth pursuit related brain activation during free movie viewing** Ioannis Agtzidis, Inga Meyerhoefer, Michael Dorr, Rebekka Lencer

**63.336 A covered eye does not always follow objects moving smoothly in depth** Stephen Heinen, Scott NJ Watamaniuk, T. R Candy, Jeremy B Badler, Arvind Chandna

**63.337 When intercepting an approaching ball in flight, only some individuals compensate for its acceleration through head-centered spherical space.** Gabriel J Diaz, Catherine A Fromm

**63.338 Blink adaptation for vergence eye movements** Arnab Biswas, Gerrit W. Maus

**63.339 Measuring the Vergence Horopter** Ashleigh L Harrold, Philip M Grove

**63.340 Factors Influencing Webcam Eye-tracking** Brooke Bullek, Vanessa Troiani, Evan Peck, Brian King

## Eye Movements: Models, neural mechanisms

Wednesday, May 22, 8:30 am - 12:30 pm, Banyan Breezeway

**63.341 Behavioural evidence for the existence of a spatiotopic free-viewing saliency map** Matthias Kümmerer, Thomas S.A. Wallis, Matthias Bethge

**63.342 Microsaccade inhibition inhibited upon visual transients in the fovea** Katharina Rifai, Denitsa Dragneva, Siegfried Wahl

**63.343 Applying linear additive models to isolate component processes in task-evoked pupil responses** Steven M Thurman, Russell A Cohen Hoffing, Nina Lauharatanahirum, Daniel E Forster, Kanika Bansal, Scott T Grafton, Barry Giesbrecht, Jean M Vettel

**63.344 Modeling and removal of eye signals does not abolish visual cortex resting state correlation structure** Harrison M McAdams, Geoffrey K Aguirre

**63.345 Estimation of pupillary responses to rapid events** Rachel Denison, Jacob Parker, Marisa Carrasco

**63.346 I see what you did there: Deep learning algorithms can classify cognitive tasks from images of eye tracking data** Zachary J. Cole, Karl M. Kuntzelman, Michael D. Dodd, Matthew R. Johnson

**63.347 Cortical microcircuitry of gaze monitoring in supplementary eye field** Steven P Errington, Amirsaman Sajad, Jeffrey D Schall

**63.348 Topographic maps of visual space in the human cerebellum** Tomas Knapen, Wietske Van Der Zwaag, Daan Van Es

**63.349 Identifying Scanpath Trends using a Frequent Trajectory Pattern Mining Approach** Brian R King, Vanessa Troiani

## Visual Search: Eye movements, features, scenes

Wednesday, May 22, 8:30 am - 12:30 pm, Pavilion

**63.401 Eye Tracking During Search for Two Unique Targets to Investigate Categorical Effects in Subsequent Search Misses** Mark W. Becker, Kaitlyn Anderson

**63.402 Does the relationship between incidental fixations and distractor recognition depend on target consistency across visual search trials?** David F Alonso, Steffi Y Falla, Anna Vaskevich, Roy Luria, Trafton Drew

**63.403 Target-distractor similarity and distractor heterogeneity affect the number of fixations, refixations, and dwell times in visual search** Daniel Ernst, Gernot Horstmann

**63.404 Temporal integration negates pop-out and reveals attentive blank stares** Tess White, David Sheinberg, Vanessa Godina, Gideon P Caplovitz

**63.405 Explicit Sequence Learning in Hybrid Visual Search in Younger and Older Age** Erica Westenberg, Jeremy M Wolfe, Iris Wiegand

**63.406 Contextual Cueing in a Comparative Visual Search task.** M Pilar Aivar, Sandra Miguel, Elena Sanz

**63.407 Search termination when target is absent: the prevalence of coarse processing and its inter-trial influence** Jieun Cho, Sang Chul Chong

**63.408 The effects of information integration on categorical visual search** Clay D Killingsworth, Ashley Ercolino, Schmidt Joseph, Mark Neider, Corey Bohil

**63.409 Changes in target-distractor similarity space with experience in complex visual search** Patrick H Cox, Stephen R Mitroff, Dwight J Kravitz

**63.410 Are conjunctions of motion and orientation special? Evidence from singleton interference effects** Kevin Dent

**63.411 Examining the Utility of Negative Search Cues with Real-World Object Categories** Samantha D Lopez, Ashley M Ercolino, Joseph Schmidt

**63.412 Comparing Search Strategies of Humans and Machines in Clutter** Claudio Michaelis, Marlene Weller, Christina Funke, Alexander S. Ecker, Thomas S.A. Wallis, Matthias Bethge

**63.413 Metacognitive estimates predict detection accuracy in low prevalence search** Michael T Miuccio, Joseph Schmidt

**63.414 The gist in prostate volumetric imaging** Melissa Trevino, Todd S Horowitz, Marcin Czarniecki, Ismail B Turkbey, Peter L Choyke

**63.415 The effect of spatial organization in the design of visual supports for adults with communicative disorders** Yiming Qian, Krista Wilkinson, Rick Gilmore

## Visual Memory: Attention, cues, search

Wednesday, May 22, 8:30 am - 12:30 pm, Pavilion

**63.416 Too little too late: No flexible control of memory by retro-cues** Blaire Dube, Stephanie Rak, Liana Iannucci, Naseem Al-Aidroos

**63.417 More than a button response: How saccades and fixations can inform our interpretation of VWM quantification** Bret T Eschman, Shannon Ross-Sheehy

**63.418 The precision of attentional selection is far worse than the precision of the underlying memory representation** Dirk Kerzel

**63.419 Shifts of Attention in Working Memory Space Differ from Those in Perceptual Space: Evidence from Memory Search** Garry Kong, Daryl Fougne

**63.420 Visual working memory representations are shifted toward irrelevant features of distractors in intervening visual search tasks** Zachary A Lively, Gavin JP Ng, Simona Buetti, Alejandro Lleras

**63.421 Time-dependent saccadic selection in analogue and categorical visual short-term memory tasks** Sven Ohl, Martin Rolfs

**63.422 Attention for feature-context binding in working memory** Frida AB Printzslau, Nicholas E Myers, Sanjay G Manohar, Mark G Stokes

**63.423 Directing retrospective attention in visual working memory in a graded manner** Timothy C Sheehan, John T Serences

**63.424 Facial Emotions Guide Attention to Task-Irrelevant Color Cues** Thatsha Sivananthan, Steven B. Most, Kim M. Curby

## Visual Search: Attention, memory, cues, windows

Wednesday, May 22, 8:30 am - 12:30 pm, Pavilion

63.425 **Visual Search Revisited in East Asia: Experience Matters** Yoshiyuki Ueda, Chia-Chun Tsai, Sung-En Chien, Su-Ling Yeh, Jun Saiki

63.426 **From the clinic to the lab and back: Fixing the problem of missed "incidental findings"** Makaela S. Nartker, Jeremy M. Wolfe

63.427 **Large attentional window produces contextual cueing effects on target absent trials** Jeunghwan Choi, Sang Chul Chong

63.428 **Leveling the viewing field: The influence of target prevalence on the attentional window** Juan D Guevara Pinto, Megan H Papesh

63.429 **What are the features of shapes easy to remember in the visual search?** Kazuki Konno, Ruggero Micheletto

63.430 **Mere presence effects of entirely task-irrelevant but significant real objects on visual search performances** Motohiro Ito, Jun I Kawahara

63.431 **Concreteness Versus Complexity: Similarly Named Icon Features Elicit Dissimilar Performance During Visual Search** Jessica Nguyen, Mark B Neider

63.432 **Occlusion and object specific effects on visual search for complex objects** Rachel T Nguyen, Matthew S Peterson

63.433 **Perceived rather than physical direction of the double-drift stimulus pops out in visual search** Mert Ozkan, Peter U Tse, Patrick Cavanagh

63.434 **Grouping does not help you to guide conjunction visual search** Igor S. Utochkin, Vladislav A Khvostov, Jeremy M Wolfe

63.435 **Useful Field of View shows why we miss the search target when we "look at" it** Chia-Chien Wu, Jeremy M Wolfe

63.436 **Probing the early attentional benefits of negative templates** Ziyao Zhang, Nicholas Gaspelin, Nancy B. Carlisle

63.437 **Learned Feature Variability Predicts Visual Search and Working Memory Precision** Phillip P Witkowski, Joy J Geng

63.438 **How does the bzzzzzzzzzzzz influence search? - The effects of sound on memory and visual search** Caroline D. Seidel, Sage E.P. Boettcher, Dejan Draschkow, Melissa L.-H. Võ

63.439 **A secondary task stunts the development of contextual cueing** Lisa M Heisterberg, Andrew B Leber

63.440 **An individual differences investigation of the relationship between visuospatial working memory capacity and inefficient search.** Kirk Ballew, Jing Xu, Alejandro Lleras, Simona Buetti

## Visual search: Models, neural mechanisms

Wednesday, May 22, 8:30 am - 12:30 pm, Pavilion

63.441 **Information processing architectures across the visual field: an EEG study** Gaojie Fan, Gamble Heather, Robin Thomas

63.442 **Performance monitoring signals during visual priming** Jacob A Westerberg, Geoffrey F Woodman, Alexander Maier, Jeffrey D Schall

63.443 **Neural Evidence for Interference in Contextual Cueing** Anna Vaskevich, Roy Luria

63.444 **Perceptual expectancy is revealed by pupillometry and correlates with autistic traits** Antonella Pome, Paola Binda, Guido Marco Cicchini, David Charles Burr

63.445 **Collinear grouped items are more distracted for older adults: Behavior and neural imaging evidence on the collinear masking effect** Li Jingling, Yi-Ping Chao, Shuo-Heng Li, Joshua O. S. Goh, Arthur C. Tsai, Su-Ling Yeh

63.446 **How do you know if you saw that? Electrophysiological correlates of searching through memory.** Trafton Drew, Lauren H. Williams, Jeremy M. Wolfe, Iris Wiegand

63.447 **Local and global dynamics of fixation-related brain activity during visual search** Matias J Ison, Juan E Kamienkowski, Alexander Varatharajah, Mariano Sigman

63.448 **Ultrafast object detection in naturalistic vision relies on ultrafast distractor suppression** Clayton M Hickey, Daniele Pollicino, Giacomo Bertazzoli, Ludwig Barbaro

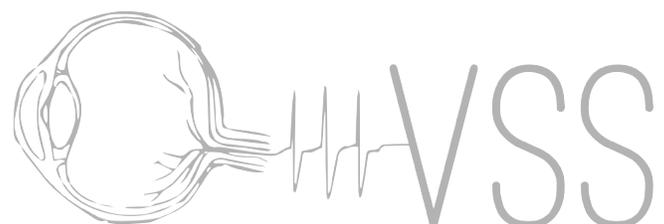
63.449 **Flipped on its Head: Deep Learning-Based Saliency Finds Asymmetry in the Opposite Direction Expected for Singleton Search of Flipped and Canonical Targets** Calden Wloka, John K Tsotsos

63.450 **Theory of Covert Search in Noise Backgrounds Correctly Predicts Asymmetrical Spatial Distributions of Misses and False Alarms** R Calen Walshe, Wilson S. Geisler

63.451 **Using Multidimensional Scaling to Quantify Category Heterogeneity Effects in Visual Search** Arryn S Robbins, Kory Scherer, Edin Sabic, Justin MacDonald, Ashley Ercolino, Joseph Schmidt, Michael C. Hout

63.452 **Efficient search for unknown targets amongst known and unknown distractors** Alejandro Lleras, Yujie Shao, Simona Buetti

63.453 **The effect of distractor statistics in visual search** Joshua M Calder-Travis, Wei Ji Ma



## Attention: Neural mechanisms 2

Wednesday, May 22, 8:30 am - 12:30 pm, Pavilion

63.454 **Awareness-dependent Distribution of Visual Bottom-up Attention** Lijuan Wang, Xilin Zhang

63.455 **Cue-evoked pupillary response reveals a left visual field bias in covert spatial visual attention** Sreenivasan Meyyappan, Abhijit Rajan, Harrison Walker, Yuelu Liu, George Mangun, Mingzhou Ding

63.456 **When Emotional Valence Matters: the Speed of Feature Binding in Object-based Attention** Mengsha Li, Xilin Zhang

63.457 **Neural representations of attention across saccades: More similar to shifting or to holding covert attention?** Xiaoli Zhang, Julie D Golomb

63.458 **Role of superior longitudinal fasciculus in visual spatial attention** Xiangfei Hong, Liyun Zheng, Abhijit Rajan, Mingzhou Ding

63.459 **Phasic alerting effects on visual processing speed are associated with intrinsic functional connectivity in the cingulo-opercular network** Marleen Haupt, Adriana L. Ruiz Rizzo, Christian Sorg, Kathrin Finke

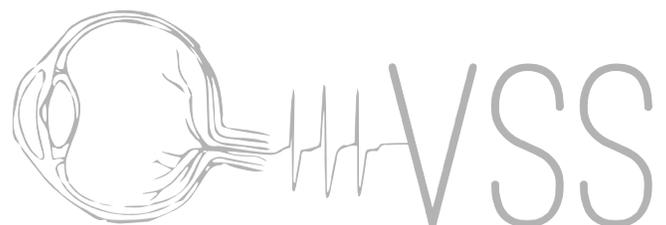
63.460 **Functional Differentiation of Visual Attention Processing Within Human Cerebellum** Ryan D Marshall, James A Brissenden, Kathryn J Devaney, Abigail L Noyce, Maya L Rosen, David C Somers

63.461 **Individual retinotopic organization in human intraparietal sulcus predicted by connectivity fingerprinting** James A Brissenden, Sean M Tobyne, Ray W Lefco, David C Somers

63.462 **Stimulus presentation type effects in retinotopic parietal cortex** Summer Sheremata

63.463 **Using Frequency Tagging to Understand the Impact of Bilingualism on Visual Attention** Ethan Kutlu, Ryan Barry-Anwar, Lisa S. Scott

63.464 **Measuring the fidelity and connectivity of stimulus representations provides a richer neural characterization of attentional fluctuations** David Rothlein, Joseph DeGutis, Michael Esterman



# TOPIC INDEX

Below is a list of talk and poster sessions by topic. Parentheses indicate the abstracts that are included in each session.

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Oral Presentation (22.11-22.17)  
Saturday, May 18, 10:45 am - 12:30 pm

## **3D Perception: Models, mechanisms**

Poster Presentation (43.301-43.310)  
Monday, May 20, 8:30 am - 12:30 pm

## **3D Perception: Shape**

Poster Presentation (43.422-43.433)  
Monday, May 20, 8:30 am - 12:30 pm

## **Attention**

Poster Presentation (33.349-33.360)  
Sunday, May 19, 8:30 am - 12:30 pm

## **Attention: Animacy, attentional blink**

Oral Presentation (22.21-22.27)  
Saturday, May 18, 10:45 am - 12:30 pm

## **Attention: Capture**

Poster Presentation (36.317-36.329)  
Sunday, May 19, 2:45 - 6:45 pm

## **Attention: Cues, context**

Oral Presentation (52.21-52.27)  
Tuesday, May 21, 10:45 am - 12:30 pm

## **Attention: Cues, individual differences, inattentive blindness**

Poster Presentation (56.332-56.346)  
Tuesday, May 21, 2:45 - 6:45 pm

## **Attention: Divided**

Poster Presentation (33.335-33.348)  
Sunday, May 19, 8:30 am - 12:30 pm

## **Attention: Features and objects 1**

Poster Presentation (23.447-23.460)  
Saturday, May 18, 8:30 am - 12:30 pm

## **Attention: Features and objects 2**

Poster Presentation (56.347-56.361)  
Tuesday, May 21, 2:45 - 6:45 pm

## **Attention: Models, neural mechanisms**

Oral Presentation (41.11-41.16)  
Monday, May 20, 8:15 - 9:45 am

## **Attention: Neural mechanisms 1**

Poster Presentation (56.362-56.371)  
Tuesday, May 21, 2:45 - 6:45 pm

## **Attention: Neural mechanisms 2**

Poster Presentation (63.454-63.464)  
Wednesday, May 22, 8:30 am - 12:30 pm

## **Attention: Reward**

Poster Presentation (56.441-56.453)  
Tuesday, May 21, 2:45 - 6:45 pm

## **Attention: Selective**

Poster Presentation (33.316-33.334)  
Sunday, May 19, 8:30 am - 12:30 pm

## **Attention: Shifting, tracking**

Poster Presentation (56.425-56.440)  
Tuesday, May 21, 2:45 - 6:45 pm

## **Attention: Shifting, tracking**

Oral Presentation (24.21-24.27)  
Saturday, May 18, 2:30 - 4:15 pm

## **Binocular Vision**

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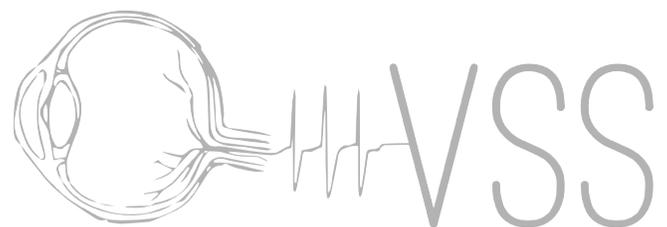
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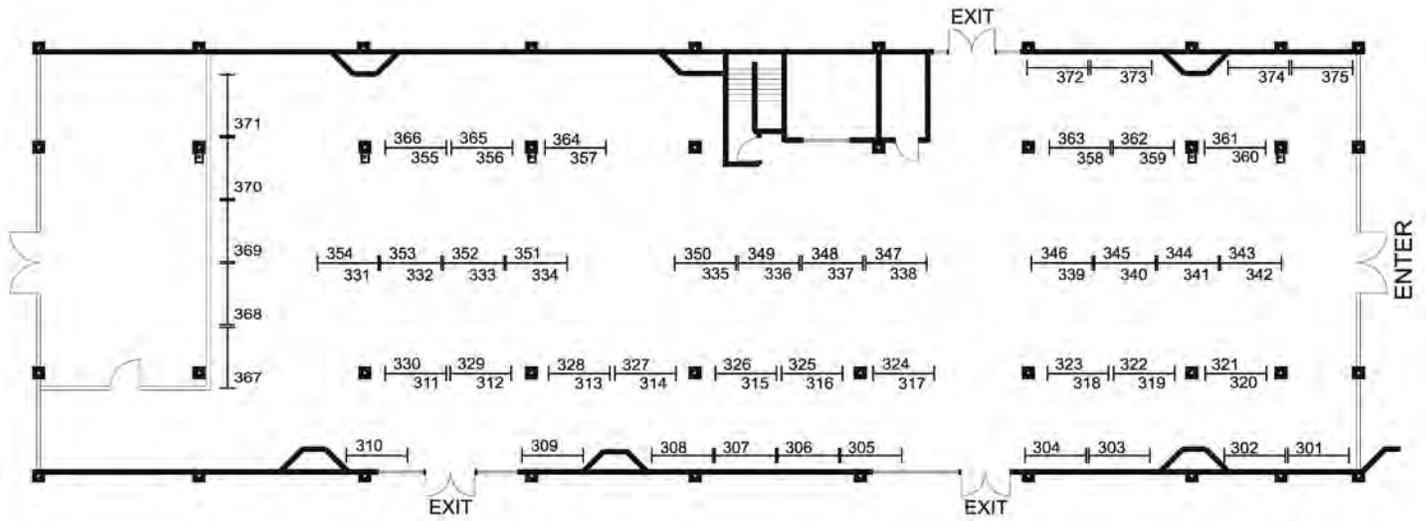
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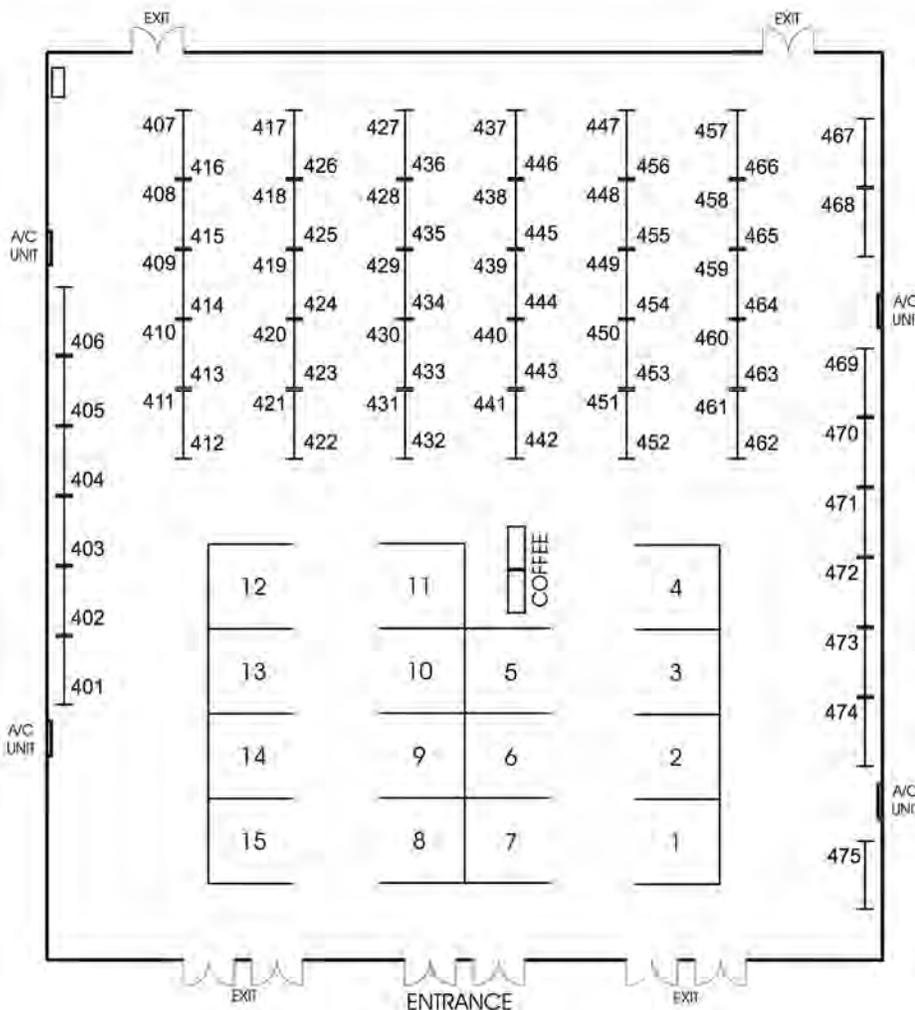
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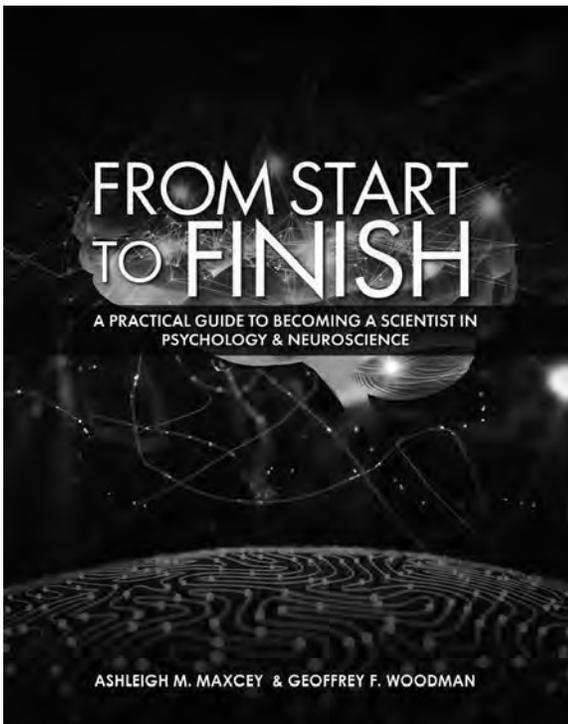
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