Abstract

The arrangement of the contents of real-world scenes follows certain spatial rules which allow for extremely efficient visual exploration. What remains underexplored is the role different types of objects hold in a scene. In the current work, we seek to unveil an important building block of scenes – anchor objects. Anchors hold specific spatial predictions regarding the likely position of other objects in an environment. In a series of three eye-tracking experiments we tested what role anchor objects occupy during visual search. In all of the experiments, participants searched through scenes for an object which was cued in the beginning of each trial. Critically, in half of the scenes a target relevant anchor was swapped for an irrelevant, albeit semantically consistent, object. We found, that relevant anchor objects can guide visual search leading to faster reaction times, less scene coverage, and less time between fixating the anchor and the target. The choice of anchor objects was confirmed through an independent large image database, which allowed us to identify key attributes of anchors. Anchor objects seem to play a unique role in the spatial layout of scenes and need to be considered for understanding the efficiency of visual search in realistic stimuli.