**Aim:** To study the transfer of global feature-based attention across features.

**Motivation:** Imagine you are looking down on to Highway 5 from an aerial perspective, and are asked to find speeding cars going north. As you scan, your brain responses to parts of the highway that you are not directly paying attention to – the *unattended* locations – are heightened (Saenz *et al.*, 2002). There are also behavioral effects; Saenz *et al.* (2003) would predict that your ability to pay attention to cars going north in the *unattended* locations is improved due to the transfer of feature-based attention, where the feature is shared between the attended and the *unattended* locations. It has yet to be determined, however, whether this transfer is feature-specific, or stimulus-driven. Here, we ask if paying attention to different features of the stimulus will transfer attention to the stimulus in an unattended location. When we search for items in the real world, we often pay attention to specific features of the object we are looking for, like its color, among other objects. Therefore, in our design, we incorporate noise in the unattended location.

**Method:** We will use the motion after-effect (MAE) to measure the response to the unattended stimulus. It has been hypothesized that the strength of the MAE should at least be monotonically related to the strength of the neuronal response that induced it. We will use a motion nulling procedure adapted from Blake and colleagues (1993), which determines the speed that makes a stimulus undergoing the MAE appear stationary.

![Figure 1. Experimental design adopted from Saenz et al., (2002). A dual-task: subjects alternate attention between left and right of fixation to one field of coherently moving dots (upward or downward; red or green) and perform a 2IFC speed (or contrast) discrimination task on the attended side; subjects then discriminate the direction (up or down) of one of the two fields of dots.](image)

**Tasks for student:** Student participants will be provided with a 90% working MATLAB code that runs the stimuli and collects the data. They will optimize the stimulus: task difficulty, overall appearance of stimuli, and duration of experiment. The code is written so that the stimulus parameters, such as the size, number, speed, color and contrast of the dots can be changed. The code currently generates graphs reporting performance for each subject; the students will write code to compare performances across subjects. They will optimize and pilot the experiment amongst themselves for the first two days and learn how to run other subjects, providing the necessary instructions and feedback. The following three days will be spent recruiting and running additional subjects. Meanwhile, they will work on code to compare all subjects and read literature about studies examining global feature-based attention. The last day will be devoted to analyzing data and generating a PowerPoint presentation summarizing the motivation of the experiment, the design and data.