WATCHING YOU WATCH: VIDEO RECORDINGS OF EYE MOVEMENTS.

B. Garrison, G. Rech, J. Pelz*, A. Herbert*[Ψ], Center for Imaging Science, [Ψ]Department of Psychology, blg9162@rit.edu, pelz@cis.rit.edu, amhgss@rit.edu

Every day our eyes move about 150,000 times, almost always without conscious effort. During different tasks, different combinations of eye movements occur. To measure these eye movements, we use image-based eye trackers with one camera recording the eye and another recording the scene. With illumination from an infrared LED, visual fixation location is calculated by recording pupil and corneal reflection locations. Both wearable (where the participant is free to move) and stationary (using a chin-rest while participants are seated) eye trackers were used to collect video. The most obvious eye movements are those that change where one is looking: *saccades* are large, rapid movements from one point to another. Other eye movements serve to hold an image still on the retina; *smooth pursuit* involves following a moving target; the *vestibular-ocular response* (VOR) occurs when the head moves but the eyes remain focused on the same point; *torsional* movement corrects for side-to-side head tilt. Falling in both categories are *vergence* movements, which focus both eyes at the same point, and occur when the eyes move between objects at different distances and when following an object moving closer and farther away. The *opto-kinetic response* (OKR) is actually a combination of moving the eyes to a new point and following the point as it moves. OKR is the back-and-forth motion of the eyes such as when watching a passing train. In addition to those eye movements that shift or stabilize the retinal image, *miniature* eye movements include two sub-types that are essentially noise in the muscles (*tremor* and *drift*) and one that corrects for the noise (*microsaccades*). I will discuss the eye tracking technology used in the *Visual Perception Lab* and show high-quality video of the different eye movements.