I will give an overview of my lab’s research, which focuses on the brain mechanisms for vision and eye movements. I will first describe our attempts to quantitatively characterize the relationship between visual stimuli and neural activity in the primate cortex. These investigations have yielded information about the computations performed by the brain to estimate specific features of visual stimuli, such as their shape and their velocity. I will then show how these computations are changed by oculomotor signals that alert the visual cortex to changes in the visual input caused by frequent rotations of the eye. If there is time, I will discuss our preliminary work on brain stimulation aimed at improving certain mental functions.