Human brain as the center of the nervous system controls our physiology, consciousness and behavior. The function of brain relies on the interactions of tens of billions of neurons through tens of trillions of synapses. Gaining precise knowledge of neural circuits and the cellular metabolism relies on the innovative and transformative neuroimaging tools for quantitative measurement of cellular dynamics and signaling in live brain. Our lab works at the interface of image processing and imaging system development to deliver enabling tools for neuroscience research. In this talk, we will discuss the latest development on imaging brain across multiple temporal and spatial scales.