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“Optogenetic Stimulation Elicits Robust Electrophysiological and fMRI Signals in the Primate Brain”

Abstract:

Optogenetics is a state-of-the-art method in neuroscience research that enables the manipulation of specific brain cells. Although numerous rodent studies have demonstrated significant behavioral and electrophysiological effects using optogenetics. However, only a few primate studies have combined optogenetic stimulation of cortical neurons with fMRI methods. In this presentation, I will demonstrate the effectiveness of optogenetic stimulation in eliciting robust and reproducible electrophysiological activity and BOLD fMRI signal changes in the secondary somatosensory cortex (S2) and off-target brain regions. Our objective is to utilize this optogenetic-fMRI technique to investigate primate pain circuits and examine the neural basis of fMRI signals.