Title: Characterizing white matter pathway in the human visual system by using diffusion MRI

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The human visual system comprises an intricate set of cortical areas that contain visual field information at different spatial scale and different type of stimulus selectivity (Wandell & Winawer, 2011, Vision Res). Understanding the organization of multiple visual areas is essential for understanding the visual processing in the brain.

Recent advance enables us to measure the axon bundles in the living human brain, throughout the non-invasive neuroimaging technology called diffusion-weighted MRI (DWI) and fiber tractography algorithms (Jones et al., 2012, NeuroImage). DWI enables us to examine the fiber connections between widely separated cortical regions and help us understand the neural circuitry for the mechanisms involved multiple cortical areas.

In the present talk, I would like to describe 1) recent advances in diffusion MRI and fiber tractography, 2) preliminary results on my ongoing diffusion MRI project at Stanford, which examines the relationship between visual field maps and white matter connections within human visual cortex. At the end, I would like to also talk about the research environment and life at Stanford.