Integration of multiscale brain imaging and genomics data with sparse models

I will present our recent efforts on the development of sparse models for multi-scale and multi-modal genomic and image data integration and analysis. First, I will give an overview of multiscale imaging genomics. Second, I will show how to use sparse group CCA model to correlate genomic and image data and how to design sparse models (e.g., collaborative low rank regression) for integrating genomic, imaging and protein-protein interaction networks. Finally, I will present a scaled Lp norm based sparse regression model for biomarker detection, leading to improved diagnosis of mental illnesses (e.g., schizophrenia).