

NUMERICAL ANALYSIS AND SCIENTIFIC COMPUTING
SEMINAR

*Computational and Predictive Models for Brain Imaging
Studies*

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Abstract: Uncovering anatomical changes over time is important in understanding brain development, aging, and disease progression. Data for these studies, image and shape time series, have complex structures and are best treated as elements of non-Euclidean spaces. In this talk, I present our non-Euclidean models for image and shape regression to estimate the time-varying trend of a population by generalizing Euclidean regression and to predict a subject-specific trend by integrating image geometry with deep neural networks. I also introduce a complementary segmentation network that preprocesses image scans and accurately extracts the brain from both normal and pathological images. Our experimental results demonstrated the promise of our models in the study of normal brain aging and Alzheimers disease.

Friday, May 4, 2018, 2:00 pm
Mathematics and Science Center: W301

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