

Modeling Anatomical Heterogeneity in Populations

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In this talk, I will present a novel model for anatomical variability in a population. Based on this model, we developed a fast and efficient algorithm that clusters a set of images while co-registering them using a parameterized, nonlinear transformation model. The output of the algorithm is a small number of template images that represent different modes in a population. This is in contrast with traditional, hypothesis-driven computational anatomy approaches that assume a single template for population modeling. The experimental results demonstrate that the algorithm can discover interesting sub-populations, suggesting applications in atlas-based segmentation and statistical analysis of anatomical differences in clinical studies.