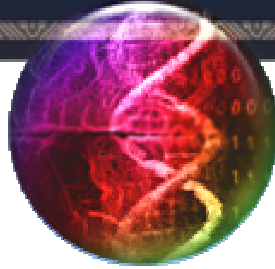


Center for
**Computational
Biology (CCB)**



Presents

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Monday, October 24, 2005 at 4PM - 5PM

Brain Mapping Center #221, 660 Charles E. Young Drive South

***Statistics of the anatomic geometry
of multi-object complexes via m-reps***

Both dense multi-object complexes and non-dense complexes are important in such medical areas as neuroscience and radiation treatment planning.

A probabilistic point of view on anatomic geometry is important for such objectives as segmentation by posterior optimization and hypothesis testing as to differences in object complex geometry between classes. I will review why the medial representation called m-reps is particularly well suited both to statistics on individual objects and statistics on multi-object complexes and review how a generalization of mean and principal component methods to the underlying curved abstract spaces can be done. Using novel statistical

techniques, which I will briefly explain, I will show by how much m-reps of single objects together with the appropriate non-linear statistics yields a requirement of smaller training samples. For multi-object complexes it is particularly important that the probabilistic algorithms be at multiple scale levels, each with its own characteristic entity, e.g., object complex, object (and interstitial region), figure, figural section, voxel; and that they provide probabilities the geometry relationships between neighboring entities. The Markov random field framework that this produces and the means of simultaneously representing probabilities on entity and inter-entity geometry will be discussed.

For information, please contact Ivo Dinov, PhD at 310.206.2101

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