THE UNIVERSITY OF CHICAGO

Computational and Applied Mathematics
Student Seminar

ANDREW DENNEHY

COMMITTEE ON COMPUTATIONAL AND APPLIED MATHEMATICS
University of Chicago

LINSCAN — A Linearity-Based Clustering Algorithm

MONDAY, October 24,
12-1pm
Jones Laboratory, Room 303

ABSTRACT

DBSCAN and OPTICS are well-understood, stable clustering algorithms for nonparametrically analyzing the geometry of datasets in Rn. In this talk, we discuss the generalization of these algorithms to notions of distance besides the 2-norm; in particular, we discuss how stability of the algorithm depends on only the symmetry of the distance function and thus we can consider clustering using semi-metrics. We apply this to the goal of identifying approximately linear clusters while ignoring isotropic clusters by embedding points in probability space and clustering using a semi-metric on this space derived from a linearization of the KL Divergence; this has applications in geophysics, in particular for identifying slip faults from measurements of seismic activity.