Data Science Seminar

Hosted by Department of Mathematical Sciences

- Date: Tuesday, April 09, 2019
- Time: 11:45am – 12:45pm
- Room: WH-100E
- Speaker: David Hunter (Pennsylvania State University)
- Title: Multivariate Nonparametric Mixture Models

Abstract

Finite mixture models in which the multivariate component densities are totally unspecified except that they are presumed to equal the product of their marginal densities are said to follow the conditional independence assumption. Such models are enjoying growing attention in the literature. This talk introduces these models and discusses an extension in which conditional independence is not assumed. This extension uses the well-developed technique known as independent component analysis (ICA) to create an estimation algorithm. This algorithm, implemented in the R package icamix, formulates and then optimizes an objective function in terms of penalized smoothed Kullback-Leibler distance. This new methodology is illustrated using several applications in unsupervised learning and image processing, and we discuss what is and is not known about the theoretical properties of the model and the algorithm.