Department of Applied and Computational Mathematics and Statistics Colloquium

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On Multi-view Learning With Additive Models

In this talk, a multi-view modeling framework that combines feature-based (X) data and graph-based (G) data for classification/regression of the response Y is presented in the semi-supervised learning setting. In semi-supervised learning, Y is assumed to be observed for a subset of the observations (labeled) and missing for the remainder (unlabeled). In multi-view semi-supervised learning, data come from many different sources (or data views) and the goal is incorporate this information into a comprehensive learning framework that best utilizes the multiple views of the data and the information in the unlabeled data for prediction, testing, and interpretation. The procedure proposed for fitting this model is a semi-supervised fixed point approach that essentially extends the generalized additive model into this more general setting. Iterative algorithms for approximating the solution are presented, along with a discussion of the existence criteria for the fixed point. The additive model is shown to incorporate view interaction terms and perform view selection (organizing the views in terms of importance). Examples demonstrating applications in drug discovery and text analysis are provided.

Friday, January 16, 2015
4:30 PM – 5:30 PM
127 Hayes-Healy Center

Colloquium Tea 4:00 PM to 4:30 PM 154 Hurley Hall