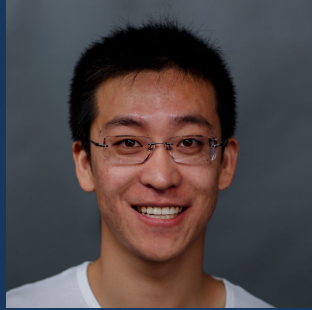


Department of Applied and Computational Mathematics and Statistics Colloquium



Guo Yu
Department of Statistics
University of Washington

Reluctant Interaction Modeling

Including pairwise interactions between the predictors of a regression model can produce better predicting models. However, to fit such interaction models on typical data sets in biology and other fields can often require solving enormous variable selection problems with billions of interactions. The scale of such problems demands methods that are computationally cheap (both in time and memory) yet still have sound statistical properties. Motivated by these large-scale problem sizes, we adopt a very simple guiding principle: One should prefer a main effect over an interaction if all else is equal. This “reluctance” to interactions, while reminiscent of the hierarchy principle for interactions, is much less restrictive. We design a computationally efficient method built upon this principle and provide theoretical results indicating favorable statistical properties. Empirical results show dramatic computational improvement without sacrificing statistical properties.

Wednesday, February 5, 2020
4:15 PM – 5:15 PM
127 Hayes-Healy Center

Colloquium Tea 3:45 PM to 4:15 PM 101A Crowley Commons Room