Indiana University Indianapolis
Department of Mathematical Sciences

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, September 24, 2024
Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: **Yishan Cui**
Department of Mathematical Sciences, IU Indianapolis

Title: **Penalized Rank-based Inference for Individualized Treatment Regime in Single Index Varying Coefficient Model**

Abstract:

Individualized treatment rules (ITRs) provide critical guidance for patients by tailoring treatment decisions based on their specific covariates. However, deriving inferences for ITRs can be challenging, particularly when interactions between treatment and covariates are modeled non-parametrically, as this can introduce significant bias in estimating the ITRs. In this paper, we propose a rank-based inference procedure for ITRs under a semi-parametric single-index varying coefficient model, where the non-parametric coefficient function is assumed to be monotone increasing. To avoid direct estimation of the non-parametric function, our approach leverages maximum rank correlation. For hypothesis testing, we derive the asymptotic distribution of the proposed estimator using de-biasing techniques. The finite-sample performance of the proposed method is assessed through Monte Carlo simulations and real data applications.