Indiana University Indianapolis
Department of Mathematical Sciences

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, September 17, 2024
Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: **Ran Mo**
Department of Mathematical Sciences, IU Indianapolis

Title: **Outlier Resistant Heterogeneous Treatment Effect Inference in the Absence of Symmetry and Light Tail Assumptions**

Abstract:

The Conditional Average Treatment Effect (CATE) is essential for understanding treatment heterogeneity, but traditional estimation methods often struggle with outliers and heavy-tailed errors. To address these challenges, we propose a robust estimator for CATE that does not rely on assumptions of symmetry or light-tailed distributions. Unlike conventional M-estimators, which assume symmetric error distributions, our approach utilizes the adaptive Huber loss, which adjusts its robustification parameter according to sample size, providing both asymptotic unbi- asedness and robustness even without the symmetric or light-tailed distribution assumptions. Procedures for selecting the optimal robustification parameter and constructing asymptotically valid confidence intervals are developed based on our theoretical results. The method is validated through simulations and applied to NHANES data to investigate the impact of heavy alcohol consumption on liver enzyme levels across different ages.