Indiana University-Purdue University Indianapolis

Department of Mathematical Sciences

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, October 10, 2023
Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: **Jiayi Wang**
Department of Mathematical Sciences,
University of Texas at Dallas

Title: **Flexible Functional Treatment Effect Estimation**

Abstract:

We study treatment effect estimation with functional treatments where the average po- tential outcome functional is a function of functions, in contrast to continuous treatment effect estimation where the target is a function of real numbers. By considering a flexi- ble scalar-on-function marginal structural model, a weight-modified kernel ridge regression (WMKRR) is adopted for estimation. The weights are constructed by directly minimizing the uniform balancing error resulting from a decomposition of the WMKRR estimator, in- stead of being estimated under a particular treatment selection model. Despite the complex structure of the uniform balancing error derived under WMKRR, finite-dimensional convex algorithms can be applied to efficiently solve for the proposed weights thanks to a repre- senter theorem. The optimal convergence rate is shown to be attainable by the proposed WMKRR estimator without any smoothness assumption on the true weight function. Cor- responding empirical performance is demonstrated by a simulation study and a real data application.

Bio:
Dr. Jiayi Wang is an Assistant Professor in the Department of Mathematical Sciences at the University of Texas at Dallas. She obtained her Ph.D. degree in the Department of Statistics at Texas A&M University(TAMU), advised by Dr. Raymond Wong. Prior to TAMU, she received a B.S. in Statistics from Zhejiang University in 2017. Dr. Wang is broadly interested in methodology and theory in nonparametric statistics and machine learning. Her recent research focuses on statistical problems with complex functional data or unknown missing structures.