

**Indiana University-Purdue University  
Indianapolis**  
**Department of Mathematical Sciences**

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, September 07, 2021  
Zoom Meeting: Meeting ID: 845 0989 4694

**Speaker:** **Shuoyang Wang**  
*Department of Mathematics and Statistics, Auburn University*

**Title:** **Functional data regression via deep neural networks**

**Abstract:**

In this talk, I will discuss a deep neural networks-based method to perform nonparametric regression for multi-dimensional functional data under two scenarios: either under the correctly assumed underlying model or the misspecified one. The proposed estimators are based on sparsely connected deep neural networks with ReLU activation function. We provide the convergence rate of the proposed deep neural networks estimator in terms of the empirical norm. Through Monte Carlo simulation studies, we examine the finite sample performance of the proposed method. Finally, the proposed method is applied to analyze positron emission tomography images of patients with Alzheimer's disease.

**Bio:**

Shuoyang Wang is a 5th year Ph.D. student in the Department of Mathematics and Statistics at Auburn University, jointly supervised by Prof. Guanqun Cao and Prof. Zuofeng Shang, with research interest on Functional Data Analysis, Non-parametric Models, Deep Neural Network, Machine learning and Minimax Theory.