Indiana University-Purdue University Indianapolis

Department of Mathematical Sciences

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, October 19, 2021
Zoom Meeting: Meeting ID: 845 0989 4694

Speaker: **Wennan Chang**
School of Electrical and Computer Engineering, Purdue University

Title: **Enhance subspace learning and local linear dependence discovery with mixture model**

Abstract:

Identifying disease subtypes is of key significance for the application of personalized medicine. Low dimensional latent space always reveals important properties and mechanism of disease. Several critical challenges are heterogeneous within a disease, multi-model underlying truth and existence of outliers. Here we present three methods to address these challenges. In the first part, we introduce our work Supervised clustering of high-dimensional data using regularized mixture modeling. It is a method proposed to identifying relationships between genetic variations and their clinical presentation. In the second part, we introduce our work Discovery of disease heterogeneity by identifying Low Rank Matrix using mixture model which extend above work in an unsupervised way. In the third part, we introduce our work Spatially and robustly hybrid mixture regression model for inference of spatial dependence. This work extends discovering significant linear relationship of genetic data on spatial transcriptomic data which is very popular and promising recently.

Bio:
Wennan Chang is currently a 5-year PhD student at ECE department. Also he is a Research Assistant at IU School of Medicine in Chi Zhangs lab (https://zcslab.github.io/). His research focus on method/algorithm development with large scale medical data, R package and R shiny development (https://changwn.github.io/). He received his Bachelor and Masters degree at Nankai University, Tianjin, China. After summer internship at Gilead Sciences Inc, he has been promoted as a Research Scientist after graduation.