

## Data Science Seminar

Hosted by the Department of Mathematics and Statistics

- Date: Tuesday, October 21, 2025
- Time: 12:15pm - 1:15pm
- Room: Whitney Hall 100E
- Speaker: Dr. Fei Xue (Purdue University)
- Title: Statistical Methods for Mobile Health Data.

### ***Abstract***

Physical activity is crucial for human health. With the increasing availability of large-scale mobile health data, strong associations have been found between physical activity and various diseases. However, accurately capturing this complex relationship is challenging, possibly because it varies across different subgroups of subjects, especially in large-scale datasets. To fill this gap, we propose a generalized heterogeneous functional method which simultaneously estimates functional effects and identifies subgroups within the generalized functional regression framework. The proposed method captures subgroup-specific functional relationships between physical activity and diseases, providing a more nuanced understanding of these associations. Additionally, we introduce a pre-clustering method that enhances computational efficiency for large-scale data through a finer partition of subjects compared to true subgroups. In the real data application, we examine the impact of physical activity on the risk of mental disorders and Parkinson's disease using the UK Biobank dataset, which includes over 79,000 participants. Our proposed method outperforms existing methods in future-day prediction accuracy, identifying four subgroups for mental disorder outcomes and three subgroups for Parkinson's disease diagnosis, with detailed scientific interpretations for each subgroup.

Biography of the speaker: Dr. Fei Xue is an Assistant Professor of Statistics at Purdue University. She received her Ph.D. in Statistics from the University of Illinois Urbana-Champaign in 2019, and was a Postdoc Researcher in Department of Biostatistics, Epidemiology and Informatics at the University of Pennsylvania during 2019-2021. Fei's research focuses on data integration, mobile health, missing data, and high dimensional inference.

From:

<http://www2.math.binghamton.edu/> - **Department of Mathematics and Statistics,  
Binghamton University**

Permanent link:

<http://www2.math.binghamton.edu/p/seminars/datasci/102125>



Last update: **2025/10/14 01:08**