Department Colloquium
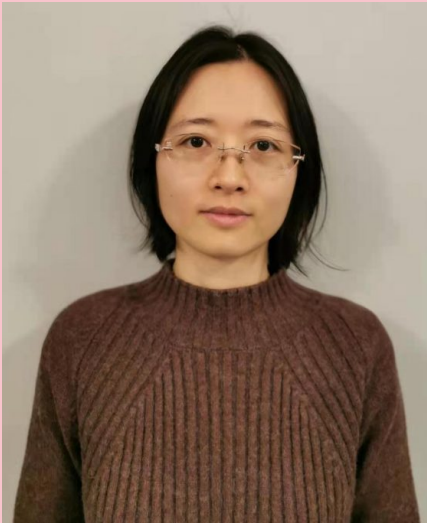## Mathematics and Statistics
York University

Date, Time, and Room

Friday November 1, 2024
1:30PM-2:30PM
HNE B17

Speaker

Dr. Tianyu Gu
York University

Title

Functional Data Analysis in Sports Analytics and Kinesiology

Abstract

In this talk, I will explore the application of functional data analysis (FDA) to sports analytics and kinesiology. I will first present methods for developing in-game win probabilities for the National Rugby League. By incorporating real-time features, score differentials, and betting odds, we develop a conditional probability framework for predicting win probabilities throughout the course of a match. The second part of my talk investigates how player acceleration changes with age in soccer. With the availability of tracking data from the 2019 season of the Chinese Super League, we calculate an individual player's maximum acceleration for each single match. The player's maximum accelerations are treated as incomplete functional data. We estimate the average maximum acceleration by a local linear smoothing method. Finally, I will discuss a sparse estimation method for historical functional linear models. Using this model, we explore the effect of muscle activation on lip acceleration during speech production, which offers new perspectives in kinesiology through FDA.

Refreshments in Ross N620 at 2:30PM

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