Department Colloquium
Mathematics and Statistics
York University

Date, Time, and Room

Monday October 21, 2024
2:30PM-3:30PM
Ross S136

Speaker

Dr. Divya Sharma
York University

Title

Beyond Traditional Statistical Methods: Leveraging Deep Learning for Longitudinal Data with Applications in Healthcare

Abstract

Deep learning, a subfield of machine learning, provides robust tools for analyzing complex healthcare data, particularly when dealing with time-dependent, longitudinal information. In this talk, I will present an overview of deep learning and the underlying statistical and mathematical foundations that guide its learning process. I will then introduce Long Short-Term Memory (LSTM) networks, emphasizing their capability to capture temporal dependencies in longitudinal datasets. To showcase the practical application of these methods, I will highlight a case study from a liver disease cohort, demonstrating how LSTMs can effectively predict patient outcomes. Additionally, we will explore a novel interpolation-based mathematical technique for feature extraction, ensuring model transparency and addressing the 'black box' challenge often associated with deep learning models.

Refreshments in Ross N620 at 3:30PM

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