TAL RESEARCH DAY
Tuesday, June 27, 2023
Sponsored by the
Transit Analytics Lab
University of Toronto Mobility Network

Final Program

09:00 **Introduction to the Transit Analytics Lab (TAL)**
Words of Welcome and Update on TAL Activities (Amer Shalaby)

9:15 **Transit Analytics to Support Planning**
(Moderator: Brendon Hemily)
- Constructing Origin-Destination Demand Matrix using Wi-Fi and AFC Gate Count Data: A Case Study of Toronto's Subway Network (Diego Da Silva)
- Trends in Toronto's Transit Ridership Recovery: Insights from Subway Wi-Fi Records (Roger Chen)
- Modelling On-Demand Transit Ridership (Alaa Itani)

10:15 Break

10:30 **Operations Analytics to Improve Rail Performance**
(Moderator: Amer Shalaby)
- Impact of Subway Service Disruption on User Mobility: Analysis and Visualization Using Customer Facing Wi-Fi Data in Toronto (Aidan Grenville)
- Generalized Framework for OD Prediction in Subway Systems using WiFi Data: Temporal Graph Neural Network Approach (Diego Da Silva)
- SPUR: Modular, Data-Driven Mesoscopic Simulator for Stochastic Railway Networks (Peter Lai)

11:30 Lunch Break

12:30 **Keynote: A Conversation with John Levin on Transit Data and Analytics**
John Levin, Director-Strategic Initiatives, Metro Transit (Minneapolis)

1:30 **Analytics to Support Bus Operations**
(Moderator: Brendon Hemily)

- Leveraging Large Language Models (LLMs) for Improving Public Transit Systems: An Exploration of GPT Models and State-of-the-Art Applications (Jiahao Wang)
- Extraboard Operator Planning and Scheduling Under Uncertainty (Jilin Song)
- Impacts of Transit Driver Advisory System with Space and Time Priorities on Route Performance (Kareem Othman)

2:30 Break

2:45 **Analytics to Support Planning and Deployment of Zero Emission Buses (ZEBs)**
(Moderator: Amer Shalaby)

- Insights from Research on ZEB Deployment (Diego Da Silva)
- Optimization Model for Planning On-Route Charging Infrastructure and Schedules of ZEB Fleets (Lorna Licollari)
- Data-Driven Prediction of e-Bus Battery Consumption Rates using Machine Learning (Kareem Othman)

3:45 Wrap-Up

4:00 End of Research Day