Alexander Bukharin

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Education

Aug 2021 – Present | **Georgia Institute of Technology**
Ph.D. in Machine Learning

Aug 2017 – May 2021 | **Georgia Institute of Technology**
B.S. in Industrial and Systems Engineering, Concentration in Advanced Studies in Operations Research and Statistics, GPA: 4.0

Publications

Journal Articles (published, in revision, or submitted)

1. Early Detection of COVID-19 Hotspots Using Spatio-Temporal Data.
   Shixiang Zhu, **Alexander Bukharin**, Liyan Xie, Shihao Yang, Pinar Keskinocak, Yao Xie
   Submitted to IEEE Journal of Selected Topics in Signal Processing
   *Best Paper Award (Honorable Mention) at ICML Time Series Workshop 2021
   *A short version is accepted for oral presentation and highlighted as a contributed talk by ICML Time Series Workshop 2021
   *Finalist of Best Applied Paper Competition at 2021 INFORMS Workshop on Data Mining and Decision Analytics
   *Excellent Poster Award at Georgia Statistics Day 2021
2. High-resolution Spatio-temporal Model for County-level COVID-19 Activity in the US.
   Shixiang Zhu, **Alexander Bukharin**, Liyan Xie, Mauricio Santillana, Shihao Yang, Yao Xie
   ACM Transactions on Management Information Systems, July 2021
3. Five-Year Project-Level Statewide Pavement Performance Forecasting Using a Two-Stage Machine Learning Approach Based on Long Short-Term Memory.
   Bukharin, Alexander W., Zhongyu Yang, and Yichang Tsai.
   Transportation Research Record, May 2021

Workshop

1. Data-Driven Optimization for Police Beat Design in South Fulton, Georgia
   Shixiang Zhu, **Alexander W Bukharin**, Le Lu, He Wang, Yao Xie
   KDD Workshop on Data Science for Social Good 2021

Research Experience

Jan 2021 - Present | **Robust Multi-Agent Reinforcement Learning:** Study the effect of adversarial training on the robustness of MARL algorithms to observation noise and different environment changes with applications to traffic light control, autonomous driving, and robotics.

Aug 2019 - May 2021 | **Spatio-Temporal Data Mining:** Develop methods for spatio-temporal modelling and decision making by combining machine learning, statistics, and operations research. This work was motivated by high-impact problems from police operations and epidemiology.

Work Experience

Jun 2021 - Aug 2021 | **Research Intern, NEC Labs America:** Developed novel methods for distribution-based multiple instance learning with applications to pothole detection and fiber optic cable mapping.

Jul 2020 - Aug 2020 | **Quantitative Research Intern, Truist:** Compared the performance of the Black-Scholes and Bachelier models for derivatives trading.

Teaching Experience

Teaching Assistant:

- Stochastic Manufacturing and Service Systems (ISyE 3232), Fall 2021
- Engineering Economy (ISyE 3025), Spring 2020
- Probability with Applications (ISyE 2027), Fall 2019

Honors

- Presidents Fellowship at Georgia Tech, 2021
- College of Engineering Undergraduate Research Award, 2020
- Presidents Undergraduate Research Award at Georgia Tech, 2018, 2020