Xin Wang

Ph.D. Student in Transportation Engineering

2117 NE Mason Rd
Seattle
WA 98195
xinw22@uw.edu
Homepage | Google Scholar

Research Interests

Core AI Research

- Stability analysis and Lipschitz-like properties of Neural Networks
- Machine unlearning via variational inequalities and influence functions
- Adversarial robustness and transferability in spatiotemporal forecasting
- Scalable optimization methods (Hessian-vector products, low-rank updates)

Applications in Transportation Systems

- Cybersecurity in intelligent transportation (ITS)
- Robust traffic forecasting, signal control, and V2X communications

Education

2022–Present **Ph.D., Transportation Engineering**, *University of Washington*, Seattle, WA
Advisor: Prof. Xuegang (Jeff) Ban

2020–2022 **M.S., Applied Statistics**, *Renmin University of China*, Beijing, China

2016–2020 **B.S., Applied Mathematics**, *Central South University*, Changsha, China

Research & Teaching

2022–Present **Research Assistant**, *University of Washington*, Seattle, WA

- Machine unlearning, adversarial robustness, and optimization for intelligent transportation systems.

Autumn 2025 **Teaching Assistant**, *CET 513: Optimization in Transportation, UW CEE*

- Lab sections, office hours, and grading.

Autumn 2024 **Teaching Assistant**, *CET 513: Optimization in Transportation, UW CEE*

- Lab sections, office hours, and grading.

Industry Experience

Jan–May 2021 **Machine Learning Engineer Intern**, *Baidu Inc.*, Beijing, China

- Multi-objective ranking optimization for online video search using Pareto-Efficient LTR (PE-LTR).
- Improved both NDCG and CTR; identified Pareto solutions with NSGA-II (fast non-dominated sorting, elitist MOEA).

Selected Publications

Core AI Contributions

Set-Valued Sensitivity Analysis of Deep Neural Networks
Xin Wang, Feilong Wang, Xuegang Jeff Ban.
Proceedings of the AAAI Conference on Artificial Intelligence, 39(20) (2025): 21304–21311.

Machine Unlearning of Traffic State Estimation and Prediction
Xin Wang, R. Tyrrell Rockafellar, et al.
arXiv:2507.17984 (2025).

Model-Targeted Data Poisoning Attacks against ITS Applications with Provable Convergence
Xin Wang, Feilong Wang, Yuan Hong, R. Tyrrell Rockafellar, et al.
arXiv:2505.03966 (2025).

Applications in Transportation Systems

Transferability in Data Poisoning Attacks on Spatiotemporal Traffic Forecasting Models
Xin Wang, Feilong Wang, Yuan Hong, Xuegang Ban.
Transportation Research Part C: Emerging Technologies, 183 (2026): 105501.

Data poisoning attacks on traffic state estimation and prediction
Wang, Feilong, Xin Wang, Hong, Yuan, Rockafellar, R. Tyrrell, Ban, Xuegang Jeff.
Transportation Research Part C, 168 (2024): 104577.

Data poisoning attacks in intelligent transportation systems: A survey
Wang, Feilong, Xin Wang, Ban, Xuegang Jeff.
Transportation Research Part C, 165 (2024): 104750.

Infrastructure-enabled Defense Methods against Data Poisoning Attacks on Traffic State Estimation and Prediction
Feilong Wang, Xin Wang, Jeff Ban.
Conference in Emerging Technologies in Transportation Systems (TRC-30), 2025.

Invited Talks & Guest Lectures

Jan 2025 **Data Poisoning Attacks on Traffic State Estimation and Prediction**
ISTTT25

June 2024 **A Review of Data Poisoning Attacks in Intelligent Transportation Systems**
TRB 2025

Academic Service

Reviewer: Transportation Research Part C, TRB Annual Meeting, ICML, AAAI