Yifan Wu

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Summary

Specializing in modeling and solving challenging real-world problems. Experienced in comprehensive optimization, including modeling, algorithm development, and implementation, to achieve maximum efficiency. Interested in applications of large-scale optimization problems in industry, specifically supply chain and logistics.

Education

Texas A&M University, PhD. in Operations Research — Sep 2021 – May 2026 (expected)
- *Advisor: Prof. Joe Geunes & Prof. Xiaofeng Nie.* GPA: 3.9/4.0.
- Relevant Coursework: Linear Programming; Non-linear and Dynamic Programming; Integer Programming; Large-scale Stochastic Programming; Simulation Optimizaiton; Analysis of Algorithms; Stochastic Process;

Xi'an Jiaotong University, M.S. in Mechanical Engineering — Sep 2017 – May 2020
- *Advisor: Prof. Guanghua Xu*. GPA: 3.5/4.0.
- Research topics: Brain-computer Interface; Signal Processing; Robotic System.

Xi'an Jiaotong University, B.E. in Mechanical Engineering — Sep 2013 – May 2017
- GPA: 3.3/4.0.

Technical Skills

Programming Languages:
- C++: for large object-oriented programming and projects demanding high performance.
- Python: for data processing, scripting, and simple problem-solving.

Optimization Packages: Gurobi, CPLEX, AMPL.

Machine Learning Frameworks: XGBoost, Scikit-learn, Pytorch.

Selected Projects

Evacuation District Partitioning and Optimization for Hurricane Response — May 2024 - Aug 2025
worked with Dr. David Eckman (paper preparation)
- Proposed a two-stage stochastic mixed integer programming framework for modeling the district-based hurricane evacuation, integrated with the Cell Transmission Model to capture the dynamic behavior of traffic flow.
- Developed a novel branch-and-cut algorithm based on Progressive Hedging, which is tailored to exploit the problem structure and improve solution efficiency. Achieved state-of-the-art performance on the SSLP dataset.
- Designed and implemented a hierarchical local search framework driven by simulation to further improve the quality of district partitioning. The framework enables more accurate representations of human behavior and traffic flow in real-world scenarios.
- **Technical stack**: C++, SUMO, graph theory, metaheuristic, discrete simulation optimization.

Continuous p-Hub Location Problem — Jan 2022 - Sep 2024
worked with Dr. Joe Geunes and Dr. Xiaofeng Nie (submitted)
- Proposed an efficient algorithm based on Bender's decomposition to solve the large-scale p-Hub problem (up to 160,000 demands), achieving a 50-fold performance improvement over direct Gurobi benchmarks.
- Developed a simulation-based optimization framework for deploying automated external defibrillators (AEDs) in Virginia Beach, inspired by real-world smartphone dispatch apps.
- **Technical stack**: Python, combinatorial optimization, Monte Carlo sampling, stochastic approximation.

Brain-computer Interface System for UAV Control — Mar 2019 - May 2020
- Proposed an efficient EEG recognition algorithm based on XGBoost, which has an average 20% higher accuracy than traditional methods.
- Built a Brain-computer Interface UAV control system using Robot Operating System (ROS) in Linux.
- **Technical stack**: C++, Python, Matlab, Scikit-learn.

Work Experience

Autonomous Driving Algorithm Engineer, Techinao – Wuxi, China Dec 2020 – May 2021

- Adapted the Normal Distributions Transform algorithm to enhance point cloud registration accuracy for autonomous vehicles. Integrated factor graph optimization to significantly reduce accumulated pose error, achieving a 50% reduction in error compared to previous methods.
- Engineered multi-sensor fusion using Lidar, GPS, IMU, and wheel encoder data, employing an extended Kalman filter to estimate the robot's global position. Successfully maintained accurate localization even during GPS signal loss.
- **Technical stack**: C++/C, ROS, Linux, Shell scripting.

Professional Service

Journal Referee (Number of Papers Reviewed)

- IISE transactions (1)
- Operations Research Forum (1)
- Socio-economic planning sciences (2)
- Transportation Research Part E (3)

Conference Session Organization

- INFORMS Annual Meeting, 2024, Seattle:
  - Service as chair in **Session: Adaptive Strategies in Experimentation and Logistics**.
- IISE Annual Conference 2025, Atlanta:
  - Service as chair in **Session: Optimization Models for Logistics**.

Teaching Experience

MMET 402 Inspection Methods and Procedures

- Teaching two lab sections about inspection sensors in the 2022 Spring. (60 students, undergraduate course)

IDIS 344 Distributor Information and Control Systems

- Teaching four lab sections about ERP and CRM software from the 2022 Fall to 2025 Spring. (140 students, undergraduate course)

Honors and Awards

Xi'an Jiaotong University Prize for Excellent Undergraduate Student Sep 2014, Sep 2015, Sep 2016
Xi'an Jiaotong University Prize for Excellent Graduate Student Sep 2018, Sep 2019
The Second Place in China Postgraduate Robot Innovation Competition Aug 2019