

Ruining YANG

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Education

Dept. of Transportation Engineering, Southeast University <i>Bachelor of Engineering in Traffic Engineering</i> <ul style="list-style-type: none">- GPA 3.89/4.0 and rank 7/96- All mathematics and physics courses are higher than 95%- Obtained a grade of A in student research training program	Sep. 2019 – Jun. 2023 Nanjing, China
Dept. of Civil & Environmental Engineering, National University of Singapore <i>Exchange Student</i> <ul style="list-style-type: none">- Completed final year project and obtained a grade of A	Aug. 2022 – May. 2023 Singapore
Dept. of Civil & Environmental Engineering, National University of Singapore <i>Master of Engineering (research-based program) in Transportation Engineering</i> <ul style="list-style-type: none">- GPA 4.81/5.0	Aug. 2023 – Present Singapore

Research Experience

Real-Time Operations and Routing Strategies in Mobility-on-Demand Systems

Dept. of Civil & Environmental Engineering at National University of Singapore

Advisor: Dr. Kaidi Yang

Aug. 2022 – Present

- Developed a model-free reinforcement learning method for vehicle rebalancing in mixed-autonomy mobility-on-demand systems that integrated a physics-informed digital twin to improve sample efficiency, which resulted in a research paper under review in Transportation Research Part C.
- Developing a congestion-aware reinforcement learning-based algorithm for vehicle rebalancing in autonomous mobility-on-demand systems where congestion is reflected by a link transmission model.
- Developing an online vehicle rerouting algorithm for real-time evacuation under adverse weather conditions based on uncertainty-informed model predictive control that leverages conform prediction to quantify uncertainty.

Antenna Array Optimization based on Heuristic Algorithms

Dept. of Information Science and Engineering at Southeast University

Advisor: Dr. Zhongjin Jiang

Dec. 2021 – Jul. 2022

- Developed a particle swarm optimization algorithm to efficiently optimize antenna array performance where fitness function is specially designed.
- Developed various simulation environments (i.e., diverse signals) to evaluate the algorithm effect.

Risk Evaluation and Protection of Overtaking based on Simulated Driving Experiment

Dept. of Transportation Engineering at Southeast University

Advisor: Prof. Yongjun Shen

Oct. 2020 – Nov. 2021

- Conducted state preference survey to evaluate human drivers' subjective aggressiveness during overtaking.
- Developed regression models to evaluate human drivers' objective aggressiveness during overtaking based on data collected from simulated driving experiments.

Internship

Anhui Traffic Planning, Design & Research Institute

Position: Assistant of Transportation Planning

Dec. 2021 – Jun. 2022

- Conducted analysis of traffic flow data for a transportation planning project by Q-gis and TransCAD
- Developed a geographic information database to organize and manage a large volume of geographic data which enhances the data availability and accessibility.

Awards

- Second Prize of Chinese National Advanced Mathematics Competition, 2021
- First Prize of Jiangsu Provincial Advanced Mathematics Competition, 2020
- Third Prize of Jiangsu Provincial Mathematical Modeling Competition, 2020
- Third Prize of Asia and Pacific Mathematical Modeling Competition, 2020
- Second Prize of Southeast University Mathematical Modeling, 2020
- Second Prize of Southeast University Structural Competition, 2020
- Second Prize of Southeast University Advanced Mathematics Competition, 2019

Skills

Language: Chinese (Native), English (Proficient)

Technical: Pytorch, Matlab, CPLEX, Vissim, STATA, SPSS, C#