



Rina Cheng

Jingyi Cheng in academic publications

Applied Machine Learning Researcher

Urban Transport & City Logistics

Fourth-year PhD researcher in TU Delft's Department of Transport & Planning, specialising in applied machine learning for urban transport and city logistics. Develops probabilistic forecasting and reinforcement learning methods for shared mobility, fleet operations and last-mile delivery. Led modelling and coordinated delivery of a live forecasting service in RET's travel-planning app.

Contact

Netherlands

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[LinkedIn](#)

[GitHub](#)

[Google Scholar](#)

Technical skills

Programming and tools

Python

PyTorch

Hugging Face models

OpenAI Gym

Machine learning

Probabilistic forecasting

Transformers

Graph learning

Multi-task learning

XGBoost

Deep reinforcement learning

Constrained clustering

Education

PhD researcher

TU Delft

Transport & Planning

June 2023 - present

MSc Computational Science

University of Amsterdam

July 2021 - June 2023

Final grade 8.9/10

BSc Econometrics and Operations Research

Erasmus University Rotterdam

2018 - 2021

Final grade 8.0/10

Industry and research experience

Doctoral Researcher | TU Delft

June 2023 - present | Transport and Planning

SUM forecasting service in the RET app

- Led modelling for a live XGBoost-based service predicting CHECK vehicle availability in Rotterdam, integrated into RET's travel-planning app in 2025.
- Designed demand and availability forecasts at 15-minute intervals up to 90 minutes ahead; supported expansion beyond the initial Beurs mobility hub.
- Coordinated data access and model integration with CHECK, RET, Siemens Mobility and Infoplaza, and contributed to app functionality and interface design.
- Designed and analysed an in-app user survey. The project's final customer survey recorded 91 valid responses, informing evaluation of the feature.

T-STAR probabilistic demand forecasting

- Developed a two-stage transformer framework for sparse demand at 15-minute resolution, evaluated across 235 Capital Bikeshare stations.
- Evaluated spatial and temporal robustness and zero-shot transfer to unseen service areas. Published in Transportation Research Part C in 2026; code publicly available.

STAMP demand and supply forecasting

- Developed an adaptive graph-based multi-task model jointly predicting pickups, drop-offs, fleet size and low-battery vehicle counts up to four hours ahead.
- Evaluated point and probabilistic forecasts against temporal, spatial and multi-task benchmarks. Manuscript under review at Transportation Research Part C.

Ongoing research

Investigating federated spatio-temporal forecasting for competing mobility operators, with a focus on privacy and changing client participation.

Teaching and leadership

Master thesis supervision

Supervised three AI projects with industry and research partners.

Sweco and Almelo

RL for traffic signal control

Albert Heijn

Unloading-time forecasting for logistics routing

SUM project

RL for availability-informed rebalancing incentives

Teaching

Teach an annual one-week master's module on reinforcement learning for transportation and logistics.

Head TA for a master's course, coordinating a teaching-assistant team.

Open source

Co-established and co-maintain the SUM Lab GitHub presence to share research outputs.

[SUM Lab on GitHub](#)

Additional education

Applied Mathematics

Guest student, TU Delft
2020 - 2021

Neuroscience minor

Erasmus University Rotterdam
2020 | Grade 8.4/10

Languages

English

Professional working proficiency

Chinese

Native

Rina Cheng

Research experience and selected outputs

Earlier research experience

Research Assistant | TU Delft

December 2022 - June 2023 | Part-time

- Researched real-time order dispatching and idle-courier steering for meal-delivery operations, using predicted demand to inform reinforcement-learning policies.
- Developed a dual-control deep-RL framework in the research and master's thesis work, with iteratively trained dispatching and steering policies; shared findings with industry collaborators.

Research Assistant | Erasmus School of Economics

August 2020 - August 2022 | Research internship

- Researched short-term delivery-demand forecasting using quantile regression forests and dynamic clustering in an honours research collaboration.
- Co-authored research on aspect-based sentiment analysis using a double rotatory attention model.

Meal-delivery collaboration with Takeaway.com

Research programme spanning 2021 - 2023

Connected demand forecasting with geographically constrained clustering for operational planning. Evaluated point and distributional forecasts on European and Taiwanese case studies; the collaboration also informed research on RL-based courier management.

Selected publications and manuscripts

T-STAR

A context-aware transformer framework for short-term probabilistic demand forecasting in dock-based shared micro-mobility. Cheng, J., Correia, G., Cats, O. and Sharif Azadeh, S. Transportation Research Part C, 192, 105899 (2026).

[Published article and open-source implementation](#)

A Short-Term Predict-Then-Cluster Framework for Meal Delivery Services

Cheng, J. and Sharif Azadeh, S. Data Science for Transportation, 7, 26 (2025).

[Published article](#)

Real-Time Integrated Dispatching and Idle Fleet Steering with Deep Reinforcement Learning for A Meal Delivery Platform

Cheng, J. and Sharif Azadeh, S. Preprint, arXiv:2501.05808 (2025).

[Read preprint](#)

STAMP

Multi-Task Spatio-Temporal Probabilistic Forecasting of Demand and Charge-Aware Fleet Availability in Shared E-Micromobility. Under review at Transportation Research Part C.