Tong Nie

Ph.D. Student in Mobility AI · The Hong Kong Polytechnic University / Tongji University · Hong Kong SAR / Shanghai
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Mobility AI researcher building robust, aligned, and human-centered transportation intelligence.

Safe autonomous driving | Large language models for transportation | Spatiotemporal learning | Urban AI and intelligent transportation systems

EDUCATION

Ph.D. in Civil and Environmental Engineering, The Hong Kong Polytechnic University — Sep. 2024 - Present
Hong Kong SAR · Dual Ph.D. program.

Ph.D. in Traffic Engineering, Tongji University — Sep. 2022 - Present
Shanghai, China · College of Transportation Engineering.

B.S. in Civil Engineering, Tongji University — Sep. 2018 - Jun. 2022
Shanghai, China · GPA 4.84/5.00; ranked 1/21.

SELECTED PUBLICATIONS

- **From Attacks to Curricula: Learnability-Guided Adversarial Training for Safe Autonomous Driving**. arXiv preprint, 2026; Co-first author.
- **EvoDrive: Pareto Evolution for Safety-Critical Autonomous Driving via Self-Improving LLM Agents**. arXiv preprint, 2026; First author.
- **ADV-0: Closed-Loop Min-Max Adversarial Training for Long-Tail Robustness in Autonomous Driving**. arXiv preprint, 2026; First author.
- **Steerable Adversarial Scenario Generation through Test-Time Preference Alignment**. ICLR 2026; First author.
- **Collaborative Imputation of Urban Time Series through Cross-City Meta-Learning**. IEEE TKDE, 2026; First author.
- **Exploring the Roles of Large Language Models in Reshaping Transportation Systems**. Artificial Intelligence for Transportation, 2025; First author.
- **LLM-empowered Joint Estimation and Prediction of City-wide Delivery Demand**. Transportation Research Part E, 2025; First author.
- **Geolocation Representation from Large Language Models are Generic Enhancers for Spatio-Temporal Learning**. AAAI 2025; Co-author.
- **ImputeFormer: Low Rankness-Induced Transformers for Generalizable Spatiotemporal Imputation**. KDD 2024 Oral; First author.
- **Spatiotemporal Implicit Neural Representation as a Generalized Traffic Data Learner**. Transportation Research Part C, 2024; First author.
- **Channel-Aware Low-Rank Adaptation in Time Series Forecasting**. CIKM 2024; First author.

AWARDS AND HONORS

PolyU Best Research Postgraduate Student of the Year Award — Apr. 2025

National Scholarship for Ph.D. Students — Oct. 2025

PolyU Presidential PhD Fellowship Scheme — Jan. 2024

YAN Kefei Transportation Development Fund Merit Scholarship — 2023

Outstanding Doctoral Freshman Scholarship of Tongji University — 2022

Shanghai Outstanding Graduate — 2022

China Harbour Scholarship 2021

Honorable Mention, Interdisciplinary Contest in Modeling 2021

Saint-Gobain Scholarship Grand Prize 2020

RESEARCH FUNDING

Automated Generation of Autonomous Driving Test Scenarios and Adversarial Testing Methods Jan. 2025 - Dec

National Natural Science Foundation of China's Fundamental Research Program for Young Students · Principal Investigator · 300,000 CNY

SERVICE

- Program Committee member, AAAI 2026 Main Track, AI Alignment Track, and Demo Track.
- Invited Session Co-Chair, "Innovative Applications of Large Language Models in Multimodal Transportation Systems", IEEE ITSC 2025.
- {"Reviewer for Transportation Science, Transportation Research Part C/E, IEEE TITS, IEEE Transactions on Systems, Man, and Cybernetics"=>"Systems, Communications in Transportation Research, IEEE TKDE, KDD, ICML, CVPR, ECCV, AAAI, CoRL, EMNLP, and related venues."}
- Teaching Assistant, Urban Transport Planning - Theory and Practice, The Hong Kong Polytechnic University, 2024-2025.
- Student Helper, Hong Kong Society for Transportation Studies Conference, 2024.
- Student Member, IEEE and AAAI.

INVITED TALKS AND PRESENTATIONS

- **Steerable Adversarial Scenario Generation through Test-Time Preference Alignment**. Conference Presentation, ICLR 2026, Rio de Janeiro, Brazil, Apr. 2026.
- **Exploring the Roles of LLMs in Transportation Systems**. Invited Talk, TRZ Youth Forum, Online, Apr. 2025.
- **Collaborative Time Series Imputation through Cross-city Meta Learning**. Poster Presentation, ICLR 2025, Singapore, Apr. 2025.
- **LLM-empowered Joint Estimation and Prediction of City-wide Delivery Demand**. Poster Presentation, 104th TRB Annual Meeting, Washington, DC, Jan. 2025.
- **Spatiotemporal Implicit Neural Representation as a Generalized Traffic Data Learner**. Poster Presentation, HKSTS 2024, Hong Kong SAR, Dec. 2024.
- **Channel-Aware Low-Rank Adaptation in Time Series Forecasting**. Poster Presentation, CIKM 2024, Boise, USA, Oct. 2024.
- **ImputeFormer**. Oral Presentation, KDD 2024, Barcelona, Spain, Aug. 2024.