KEXIN WANG

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RESEARCH INTERESTS

Intelligent Transportation Systems, Autonomous Vehicles

Game Theory, Reinforcement Learning

EDUCATION

University of Southern California — Los Angeles, CA
PhD. in Civil Engineering; **GPA:** 3.72/4.0 — 08/2025 - Present

Cornell University — Ithaca, NY
M.Eng in Civil Engineering; **GPA:** 3.83/4.0 — 08/2021 - 12/2022

Nanjing Forestry University — Nanjing, China
B.S. in Civil Engineering (Graduated with Distinction); **GPA:** 89.52/100; — 09/2016 - 06/2021

University of Minnesota, Twin Cities — Minneapolis, MN
Exchange Student; **GPA:** 3.77/4.0 — 08/2019 - 07/2020

RESEARCH EXPERIENCE

Traffic Equilibrium in Mixed-Autonomy Networks — Los Angeles, CA
Research Assistant, Advisor: Prof. Jong-shi Pang & Prof. Ruolin Li — 01/2025 - Present

- Developed a network equilibrium framework that integrates ride-hailing company profit maximization with HV/AV fleet operations, traffic congestion dynamics, and traveler choice behavior.
- Formulated and solved the model as a Mathematical Program with Complementarity Constraints (MCP) in GAMS using the PATH solver.
- Conducted numerical experiments to assess how AV penetration rate and relaxation parameters influence company performance, traveler welfare, and overall network efficiency.

Game-Theoretic Framework for Mixed Autonomy at Highway Weaving Ramps — Los Angeles, CA
Research Assistant, Advisor: Prof. Ruolin Li — 10/2024 - Present

- Formulated a Wardrop-equilibrium based model to capture the aggregate, strategic lane-choice behavior of human-driven vehicles (HDVs) at highway weaving ramps, and established the existence and uniqueness of the resulting equilibrium.
- Proposed two integrated control frameworks for connected and autonomous vehicles (CAVs): (i) a bilevel Stackelberg–Wardrop formulation for dedicated altruistic CAVs, and (ii) a Wardrop extension incorporating Social Value Orientation (SVO) to model relaxed altruistic CAVs.
- Analytically characterized the influence of CAVs by deriving threshold penetration rates required to shift HDV equilibrium behavior, and further examined how CAV strategy configurations affect overall system efficiency.

TEACHING EXPERIENCE

USC Civil and Environmental Engineering Department — Los Angeles, CA
Teaching Assistant for Prof. Audrey Olivier — 08/2025 - 12/2025

- Assisted in course administration for CE-119 *Statistical Data Analysis in Engineering*, including assignment design, grading, and student performance evaluation.
- Guided students in data exploration and visualization during office hours.

Cornell Civil and Environmental Engineering Department — Ithaca, NY
Academic Assistant for Prof. Matthew Reiter — 08/2022 - 12/2022

- Assisted in course management and student evaluation for *Masonry Design* and *Metal Structure* courses.
- Provided detailed feedback on design projects and assignments using professional structural analysis software such as SAP2000.

PUBLICATIONS

Wang, K., He, H., & Li, R. (2025). *When Altruism Meets Autonomy: Managing Weaving Ramp Congestion with Strategic AVs.* In preparation for submission to *Transportation Science* (IF = 4.8).

Hou, J., **Wang, K.**, Li, R., & Pang, J. (2025). *Traffic Equilibrium in Mixed-Autonomy Network with Capped Customer Waiting.* Submitted to *Transportation Science* (IF = 4.8).

He, H., **Wang, K.**, & Li, R. (2025). *To Stay or to Bypass: Unraveling Mainline Vehicles' Aggregate Strategic Decision–Making in Weaving Ramps.* In *Proceedings of the IEEE Intelligent Transportation Systems Conference (ITSC 2025).*

PRESENTATIONS

Transportation Research Board (TRB) Annual Meeting Presentation, Washington D.C., USA 01/2026

INFORMS Annual Meeting Oral Presentation, Atlanta, USA 10/2025

USC Center for Autonomy & AI Workshop Poster Presentation, Los Angeles, USA 9/2025

USC STEM Bytes Seminar Oral Presentation, Los Angeles, USA 7/2025

SoCal CEE Research Symposium Poster Presentation, Los Angeles, USA 4/2025

PAPER REVIEWS

Reviewer, *IEEE Intelligent Vehicles Symposium (IV)* 2026

Reviewer, *IEEE International Conference on Robotics and Automation (ICRA)* 2026

Reviewer, *Transportation Research Board (TRB) Annual Meeting* 2025

Reviewer, *IEEE Conference on Decision and Control (CDC)* 2025

AWARDS AND HONORS

Das Family Travel Award (University of Southern California) 2025

Second Place in Garmezy Concrete Competition (Cornell University) 2022

First Class Honors (Nanjing Forestry University) 2021

Undergraduate Research Scholarship (University of Minnesota, Twin Cities) 2020

First Class Scholarship (Nanjing Forestry University) 2017/2018/2019

PROFESSIONAL AND ACADEMIC SERVICE

Website Designer, *2026 IFAC Workshop on Cyber-Physical Human Systems (CPHS).*

SKILLS

Programming Skills: MATLAB, Python, Java, C++, R

Software and Tools: SUMO, GAMS, AutoCAD, OpenSees, Revit, SAP2000, Sketchup, 3Dmax

Language: Mandarin (Native); English (Proficient)