# Ziran Wang

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## SUMMARY

Currently lead the Purdue Digital Twin Lab at Purdue University as a Tenure-Track Assistant Professor, and previously led the Digital Twin Roadmap at Toyota Motor North America as a Principal Researcher. Published more than 50 refereed papers in premier journals and conference proceedings, and filed more than 50 patent applications worldwide. Serve as the Founding Chair of IEEE technical committee on Internet of Things in Intelligent Transportation Systems, and associated editor of four academic journals. Achievements were featured on Consumer Electronic Show (CES), and acknowledged by the US Department of Transportation NCST Dissertation Award and five best paper awards.

## EMPLOYMENT

**Purdue University, College of Engineering (West Lafayette, IN)**

- Assistant Professor
  - Autonomous and Connected Systems Initiative — *Jul. 2022 – Present*
  - Lyles School of Civil Engineering — *Jul. 2022 – Present*
  - Institute for Control, Optimization, and Networks — *Jul. 2022 – Present*
  - Center for Intelligent Infrastructure — *Jul. 2022 – Present*
  - Center for Aging and the Life Course — *Jul. 2022 – Present*

**Toyota Motor North America R&D, InfoTech Labs (Mountain View, CA)**

- Principal Researcher (Supervisor: Dr. Prashant Tiwari & Dr. John Kenney) — *Jul. 2021 – Jun. 2022*
- Research Scientist (Supervisor: Dr. Prashant Tiwari) — *Jul. 2019 - Jun. 2021*
- Research Intern (Mentors: Dr. BaekGyu Kim & Dr. Kyungtae Han) — *Jun. 2018 - Sep. 2018*

**University of California, Riverside (Riverside, CA)**

- Researcher Assistant, Transportation Systems Research Lab (Advisor: Dr. Matthew Barth) — *Jun. 2016 - Jun. 2019*
- Teaching Assistant, Mechanical Engineering, Electrical and Computer Engineering — *Sep. 2016 - Jun. 2017*
- Researcher Assistant, Cooperative Vehicle Networks Lab (Advisor: Dr. Wei Ren) — *Nov. 2015 - Jun. 2016*

**Changan Suzuki (Chongqing, China)**

- Summer Intern — *Jul. 2014 - Aug. 2014*

## EDUCATION

**Ph.D. in Mechanical Engineering** — *Sep. 2015 - Jun. 2019*
University of California, Riverside (UCR)
Advisor: Dr. Matthew J. Barth, Yeager Family Chair Professor, Electrical and Computer Engineering
Dissertation: Developing Agent-Based Distributed Cooperative Vehicle-Infrastructure Systems in the Connected and Automated Vehicle Environment

**B.E. in Mechanical Engineering and Automation** — *Sep. 2011 - Jun. 2015*
School of Automation, Beijing University of Posts and Telecommunications (BUPT)

## REFEREED PUBLICATIONS

### ***Journal Publications***

[**J19**]Federated Transfer-Ordered-Personalized Learning for Driver Monitoring Application

- Liangqi Yuan, Lu Su, and Ziran Wang
- *IEEE Internet of Things Journal*, May 2023

[**J18**]Metamobility: Connecting Future Mobility with the Metaverse

- Haoxin Wang, Ziran Wang, Dawei Chen, Qiang Liu, Hongyu Ke, and Kyungtae Han
- *IEEE Vehicular Technology Magazine*, Apr. 2023

[**J17**]Driver Digital Twin for Online Prediction of Personalized Lane Change Behavior

- Xishun Liao, Xuanpeng Zhao, Ziran Wang, Zhouqiao Zhao, Kyungtae Han, Rohit Gupta, Matthew J. Barth, and Guoyuan Wu
- *IEEE Internet of Things Journal*, vol. 10, no. 15, Aug. 2023, pp. 13235–13246

[**J16**]Planning for Automated Vehicles with Human Trust

- Shili Sheng, Erfan Pakdamanian, Kyungtae Han, Ziran Wang, John Lenneman, David Parker, and Lu Feng
- *ACM Transactions on Cyber-Physical Systems*, vol. 6, no. 4, Oct. 2022, pp. 1–21

[**J15**]Gaussian Process-Based Personalized Adaptive Cruise Control

- Yanbing Wang, Ziran Wang, Kyungtae Han, Prashant Tiwari, and Daniel B. Work
- *IEEE Transactions on Intelligent Transportation Systems*, vol. 23, no. 11, Nov. 2022, pp. 21178–21189

[**J14**]Mobility Digital Twin: Concept, Architecture, Case Study, and Future Challenges

- Ziran Wang, Rohit Gupta, Kyungtae Han, and Prashant Tiwari
- *IEEE Internet of Things Journal*, vol. 9, no. 8, Sep. 2022, pp. 17452–17467

[**J13**]Game Theory-Based Ramp Merging for Mixed Traffic with Unity-SUMO Integrated Simulation

- Xishun Liao, Xuanpeng Zhao, Ziran Wang, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu
- *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 52, no. 9, Sep. 2022, pp. 5746–5757

[**J12**]The Role of Digital Twins in Connected and Automated Vehicles

- Chris Schwarz and Ziran Wang
- *IEEE Intelligent Transportation Systems Magazine*, vol. 14, no. 6, Jan. 2022, pp. 41–51

[**J11**]Co-Simulation Platform for Modeling and Evaluating Connected and Automated Vehicles in Mixed Traffic

- Xuanpeng Zhao, Xishun Liao, Ziran Wang, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu
- *SAE International Journal of Connected and Automated Vehicles*, vol. 5, no. 4, Apr. 2022

[**J10**]Vision-Cloud Data Fusion for ADAS: A Lane Change Prediction Case Study

- Yongkang Liu, Ziran Wang, Kyungtae Han, Zhenyu Shou, Prashant Tiwari, and John H. L. Hansen
- *IEEE Transactions on Intelligent Vehicles*, vol. 7, no. 2, Jun. 2022, pp. 210–220

[**J9**]Digital Twin-Assisted Cooperative Driving at Non-Signalized Intersections

- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- *IEEE Transactions on Intelligent Vehicles*, vol. 7, no. 2, Jun. 2022, pp. 198–209

[**J8**]Cooperative Ramp Merging Design and Field Implementation: A Digital Twin Approach based on Vehicle-to-Cloud Communication

- Xishun Liao, Ziran Wang, Xuanpeng Zhao, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu
- *IEEE Transactions on Intelligent Transportation Systems*, vol. 23, no. 5, May 2022, pp. 4490–4500

[**J7**]Eco-Approach and Departure along Signalized Corridors (**Best Paper Award**)

- Guoyuan Wu, Peng Hao, Ziran Wang, Yu Jiang, Kanok Boriboonsomsin, Matthew J. Barth, Michael McConnell, Shuwei Qiang, and John Stark
- *SAE International Journal of Sustainable Transportation, Energy, Environment, & Policy*, vol. 1, no. 2, 2021

**[J6]**Driver Behavior Modeling Using Game Engine and Real Vehicle: A Learning-Based Approach
- Ziran Wang, Xishun Liao, Chao Wang, David Oswald, Guoyuan Wu, Kanok Boriboonsomsin, Matthew J. Barth, Kyungtae Han, BaekGyu Kim, and Prashant Tiwari
- *IEEE Transactions on Intelligent Vehicles*, vol. 5, no. 4, Dec. 2020, pp. 738–749

**[J5]**Cooperative Eco-Driving along Multiple Signalized Intersections in a Partially Connected and Automated Vehicle Environment
- Ziran Wang, Guoyuan Wu, and Matthew J. Barth
- *IEEE Transactions on Intelligent Transportation Systems*, vol.21, no.5, May 2020, pp. 2029–2038

**[J4]**A Survey on Cooperative Longitudinal Motion Control of Multiple Connected Automated Vehicles
- Ziran Wang, Yougang Bian, Steven E. Shladover, Guoyuan Wu, Shengbo E. Li, and Matthew J. Barth
- *IEEE Intelligent Transportation Systems Magazine*, vol. 12, no. 1, Spring 2020, pp. 4–25

**[J3]**Cooperative Ramp Merging System: Agent-Based Modeling and Simulation Using Game Engine (**Best Paper Award**)
- Ziran Wang, Guoyuan Wu, Kanok Boriboonsomsin, Matthew J. Barth, Kyungtae Han, BaekGyu Kim, and Prashant Tiwari
- *SAE International Journal of Connected and Automated Vehicles*, vol.2, no.2, May 2019, pp. 115–128

**[J2]**Cluster-Wise Cooperative Eco-Approach and Departure Application for Connected and Automated Vehicles along Signalized Arterials
- Ziran Wang, Guoyuan Wu, and Matthew J. Barth
- *IEEE Transactions on Intelligent Vehicles*, vol. 3, no. 4, Dec. 2018, pp. 404–413

**[J1]**Developing a Distributed Consensus-Based Cooperative Adaptive Cruise Control (CACC) System for Heterogeneous Vehicles with Predecessor Following Topology
- Ziran Wang, Guoyuan Wu, and Matthew J. Barth
- *Journal of Advanced Transportation*, vol. 2017, Article ID 1023654, Aug. 2017

### ***Conference Proceedings***

**[C34]**A Survey of Federated Learning for Connected and Automated Vehicles
- Vishnu P. Challepandi, Liangqi Yuan, Stanislaw H. Zak, and Ziran Wang
- *2023 IEEE 26th International Conference on Intelligent Transportation Systems (ITSC)*, Bilbao, Spain, Sep. 2023

**[C33]**Radar Enlighten the Dark: Enhancing Low-Visibility Perception for Automated Vehicles with Camera-Radar Fusion
- Can Cui, Yunsheng Ma, Juanwu Lu, and Ziran Wang
- *2023 IEEE 26th International Conference on Intelligent Transportation Systems (ITSC)*, Bilbao, Spain, Sep. 2023

**[C32]**CEMFormer: Learning to Predict Driver Intentions from In-Cabin and External Cameras via Spatial-Temporal Transformers
- Yunsheng Ma, Wenqian Ye, Xu Cao, Amr Abdelraouf, Kyungtae Han, Rohit Gupta, and Ziran Wang
- *2023 IEEE 26th International Conference on Intelligent Transportation Systems (ITSC)*, Bilbao, Spain, Sep. 2023

**[C31]**Peer-to-Peer Federated Continual Learning for Naturalistic Driving Action Recognition
- Liangqi Yuan, Yunsheng Ma, Lu Su, and Ziran Wang
- *2023 IEEE/CVF Conference on Computer Vision and Pattern Recognition*, Vancouver, Canada, Jun. 2023

**[C30]**M$^2$DAR: Multi-View Multi-Scale Driver Action Recognition with Vision Transformer
- Yunsheng Ma, Liangqi Yuan, Amr Abdelraouf, Kyungtae Han, Rohit Gupta, Zihao Li, and Ziran Wang
- *2023 IEEE/CVF Conference on Computer Vision and Pattern Recognition*, Vancouver, Canada, Jun. 2023

**[C29]**Driver Monitoring-Based Lane-Change Prediction: A Personalized Federated Learning Framework

- Runjia Du, Kyungtae Han, Rohit Gupta, Sikai Chen, Samuel Labi, and Ziran Wang
- *2023 IEEE Intelligent Vehicles Symposium*, Anchorage, AK, Jun. 2023

**[C28]**ViT-DD: Multi-Task Vision Transformer for Semi-Supervised Driver Distraction Detection

- Yunsheng Ma and Ziran Wang
- *2023 IEEE Intelligent Vehicles Symposium*, Anchorage, AK, Jun. 2023

**[C27]**GAPFORMER: Fast Autoregressive Transformers meet RNNs for Personalized Adaptive Cruise Control

- Noveen Sachdeva, Ziran Wang, Kyungtae Han, Rohit Gupta, and Julian McAuley
- *IEEE 25th International Conference on Intelligent Transportation Systems*, Macau, China, Oct. 2022

**[C26]**A Study on Learning and Simulating Personalized Car-Following Driving Style

- Shili Sheng, Erfan Pakdamanian, Kyungtae Han, Ziran Wang, and Lu Feng
- *IEEE 25th International Conference on Intelligent Transportation Systems*, Macau, China, Oct. 2022

**[C25]**Personalized Car Following for Autonomous Driving with Inverse Reinforcement Learning

- Zhouqiao Zhao, Ziran Wang, Kyungtae Han, Rohit Gupta, Prashant Tiwari, Guoyuan Wu, and Matthew J. Barth
- *2022 IEEE International Conference on Robotics and Automation*, Philadelphia, PA, May 2022

**[C24]**Online Prediction of Lane Change with a Hierarchical Learning-Based Approach

- Xishun Liao, Ziran Wang, Xuanpeng Zhao, Zhouqiao Zhao, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu
- *2022 IEEE International Conference on Robotics and Automation*, Philadelphia, PA, May 2022

**[C23]**Personalized Adaptive Cruise Control via Gaussian Process Regression

- Yanbing Wang, Ziran Wang, Kyungtae Han, Prashant Tiwari, and Daniel B. Work
- *IEEE 24th International Conference on Intelligent Transportation Systems*, Indianapolis, IN, Sep. 2021

**[C22]**Digital Twin Simulation of Connected and Automated Vehicles with the Unity Game Engine (**Best Application Award**)

- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- *2021 IEEE International Conference on Digital Twin and Parallel Intelligence*, Beijing, China, Jul. 2021

**[C21]**Trust-Based Route Planning for Autonomous Vehicles

- Shili Sheng, Erfan Pakdamanian, Kyungtae Han, Ziran Wang, John Lenneman and Lu Feng
- *12th ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS),* May 2021

**[C20]**Motion Estimation of Connected and Automated Vehicles under Communication Delay and Packet Loss of V2X Communications

- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- *SAE World Congress Experience 2021,* Virtual Conference, Apr. 2021

**[C19]**A Game Theory Based Ramp Merging Strategy for Connected and Automated Vehicles in the Mixed Traffic: A Unity-SUMO Integrated Platform

- Xishun Liao, Xuanpeng Zhao, Guoyuan Wu, Matthew J. Barth, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- *Transportation Research Board 100th Annual Meeting*, Virtual Conference, Jan. 2021

**[C18]**Augmented Reality-Based Advanced Driver-Assistance System for Connected Vehicles

- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- *2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC 2020)*, Virtual Conference, Oct. 2020

**[C17]**Long-Term Prediction of Lane Change Maneuver through a Multilayer Perceptron

- Zhenyu Shou, Ziran Wang, Kyungtae Han, Yongkang Liu, Prashant Tiwari, and Xuan Di
- *2020 IEEE Intelligent Vehicles Symposium*, Virtual Conference, Oct. 2020

**[C16]**Sensor Fusion of Camera and Cloud Digital Twin Information for Intelligent Vehicles

- Yongkang Liu, Ziran Wang, Kyungtae Han, Zhenyu Shou, Prashant Tiwari, and John H. L. Hansen
- *2020 IEEE Intelligent Vehicles Symposium*, Virtual Conference, Oct. 2020

**[C15]**Optimal Control-Based Eco-Ramp Merging System

- Zhouqiao Zhao, Guoyuan Wu, Ziran Wang, and Matthew J. Barth
- *2020 IEEE Intelligent Vehicles Symposium*, Virtual Conference, Oct. 2020

**[C14]**A Digital Twin Paradigm: Vehicle-to-Cloud Based Advanced Driver Assistance Systems

- Ziran Wang, Xishun Liao, Xuanpeng Zhao, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu
- *IEEE 91st Vehicular Technology Conference (VTC2020-Spring)*, Virtual Conference, May 2020

**[C13]**Cooperative Ramp Merging with Vehicle-to-Cloud Communications: A Field Experiment

- Xishun Liao, David Oswald, Ziran Wang, Guoyuan Wu, Kanok Boriboonsomsin, Matthew J. Barth, Kyungtae Han, BaekGyu Kim, and Prashant Tiwari
- *Transportation Research Board 99th Annual Meeting*, Washington D.C., Jan. 2020

**[C12]**End-to-End Vision-Based Adaptive Cruise Control (ACC) Using Deep Reinforcement Learning

- Zhensong Wei, Yu Jiang, Xishun Liao, Xuewei Qi, Ziran Wang, Guoyuan Wu, Peng Hao, and Matthew J. Barth,
- *Transportation Research Board 99th Annual Meeting*, Washington D.C., Jan. 2020

**[C11]**Early Findings from Field Trials of Heavy-Duty Truck Connected Eco-Driving System

- Ziran Wang, Yuan-Pu Hsu, Alexander Vu, Francisco Caballero, Peng Hao, Guoyuan Wu, Kanok Boriboonsomsin, Matthew J. Barth, Aravind Kailas, Pascal Amar, Eddie Garmon, and Sandeep Tanugula
- *IEEE 22nd International Conference on Intelligent Transportation Systems*, Auckland, New Zealand, Oct. 2019

**[C10]**The State-of-the-Art of Coordinated Ramp Control with Mixed Traffic Conditions

- Zhouqiao Zhao, Ziran Wang, Guoyuan Wu, and Matthew J. Barth
- *IEEE 22nd International Conference on Intelligent Transportation Systems*, Auckland, New Zealand, Oct. 2019

**[C9]**Lookup Table-Based Consensus Algorithm for Real-Time Longitudinal Motion Control of Connected and Automated Vehicles

- Ziran Wang, Kyungtae Han, BaekGyu Kim, Guoyuan Wu, and Matthew J. Barth
- *2019 American Control Conference,* Philadelphia, PA, Jul. 2019

**[C8]**Agent-Based Modeling and Simulation of Connected and Automated Vehicles Using Game Engine: A Cooperative On-Ramp Merging Study

- Ziran Wang, BaekGyu Kim, Hiromitsu Kobayashi, Guoyuan Wu, and Matthew J. Barth
- *Transportation Research Board 98th Annual Meeting*, Washington D.C., Jan. 2019

**[C7]**Eco-Approach and Departure along Signalized Corridors

- Guoyuan Wu, Peng Hao, Ziran Wang, Kanok Boriboonsomsin, and Matthew J. Barth
- *Transportation Research Board 98th Annual Meeting*, Washington D.C., Jan. 2019

**[C6]**A Review on Cooperative Adaptive Cruise Control (CACC) Systems: Architectures, Controls, and Applications

- Ziran Wang, Guoyuan Wu, and Matthew J. Barth
- *IEEE 21st International Conference on Intelligent Transportation Systems*, Maui, Hawaii, Nov. 2018

**[C5]**Distributed Consensus-Based Cooperative Highway On-Ramp Merging Using V2X Communications

- Ziran Wang, Guoyuan Wu, and Matthew J. Barth
- *SAE Technical Paper,* 2018-01-1177, Apr. 2018

**[C4]**Cluster-Wise Cooperative Eco-Approach and Departure Application along Signalized Arterials

- Ziran Wang, Guoyuan Wu, Peng Hao, and Matthew J. Barth
- *IEEE 20th International Conference on Intelligent Transportation Systems*, Yokohama, Japan, Oct. 2017

**[C3]**Intra-Platoon Vehicle Sequence Optimization for Eco-Cooperative Adaptive Cruise Control

- Peng Hao, Ziran Wang, Guoyuan Wu, Kanok Boriboonsomsin, and Matthew J. Barth
- *IEEE 20th International Conference on Intelligent Transportation Systems*, Yokohama, Japan, Oct. 2017

**[C2]**Developing a Platoon-Wide Eco-Cooperative Adaptive Cruise Control (CACC) System

- Ziran Wang, Guoyuan Wu, Peng Hao, Kanok Boriboonsomsin, and Matthew J. Barth
- *2017 IEEE Intelligent Vehicles Symposium*, Redondo Beach, CA, Jun. 2017

**[C1]**Developing a Distributed Consensus-Based Cooperative Adaptive Cruise Control (CACC) System

- Ziran Wang, Guoyuan Wu, and Matthew J. Barth
- *Transportation Research Board 96th Annual Meeting*, Washington D.C., Jan. 2017

## OTHER PUBLICATIONS

### *Book Chapters*

**[B5]**Driver Behavior-Aware Cooperative Ramp Merging for Intelligent Vehicles

- Xishun Liao, Xuanpeng Zhao, Ziran Wang, Matthew J. Barth, Guoyuan Wu, and Kyungtae Han
- *Towards Human-Vehicle Harmonization,* vol. 3, pp. 193 – 210, De Gruyter

**[B4]**Enhancing Driver Visual Guidance Through Mobility Digital Twin

- Ziran Wang, Yongkang Liu, and John. H. L. Hansen
- *Towards Human-Vehicle Harmonization,* vol. 3, pp. 95 – 104, De Gruyter

**[B3]**New Simulation Tools for Training and Testing Automated Vehicles

- Jiaqi Ma, Chris Schwarz, Ziran Wang, Maria Elli, German Ros, and Yiheng Feng
- *Road Vehicles Automation,* vol. 7, pp. 111 – 119, Springer

### *Technical Reports*

**[R2]**Development of Eco-Friendly Ramp Control for Connected and Automated Electric Vehicles

- Guoyuan Wu, Zhouqiao Zhao, Ziran Wang, and Matthew J. Barth
- *National Center for Sustainable Transportation, U.S. Department of Transportation,* NCST-UCR-RR-20-04, Jan. 2020

**[R1]**MOVESTAR: An Open-Source Vehicle Fuel and Emission Model based on USEPA MOVES

- Ziran Wang, Guoyuan Wu, and George Scora
- *arXiv Preprint arXiv: 2008.04986,* URL: https://github.com/ziranw/MOVESTAR-Fuel-and-Emission-Model, Aug. 2020

## PATENTS

**[P51]**Personalized Speed Limiter

- Rohit Gupta, Ziran Wang, Runjia Du, and Kyungtae Han
- U.S. patent application 18/085868, Filed Dec. 2022

**[P50]**Systems and Methods for Active Road Surface Maintenance with Cloud-Based Mobility Digital Twin

- Ziran Wang, Rohit Gupta, and Kyungtae Han
- U.S. patent application 17/992364, Filed Nov. 2022

**[P49]**System and Method for Controlling a Cruise Control System of a Vehicle Using the Moods of One or More Occupants

- Rohit Gupta, Ziran Wang, Kyungtae Han, Paul Li, Satoshi Nagashima, Pujitha Gunaratne, and Hazem Abdelkawy
- U.S. patent application 17/992026, Filed Nov. 2022

**[P48]**Method and System for Personalized Adaptive Cruise Control with Transformers and RNNs

- Ziran Wang, Rohit Gupta, and Kyungtae Han
- U.S. patent application 17/936655, Filed Oct. 2022

**[P47]**Systems and Methods for Modeling Personalized Car-Following Driving Styles with Model-Free Inverse Reinforcement Learning

- Ziran Wang, Rohit Gupta, and Kyungtae Han
- U.S. patent application 17/936459, Filed Sep. 2022

**[P46]**Systems and Methods for Simulating Connected and Automated Vehicles with Digital Twin

- Ziran Wang, Rohit Gupta, Kyungtae Han, and Runjia Du
- U.S. patent application, Filed Jul. 2022

**[P45]**Systems and Methods for Personalized Takeover Prediction with Driver Haptic Inputs

- Ziran Wang, Rohit Gupta, Kyungtae Han, and Runjia Du
- U.S. patent application, Filed Jul. 2022

**[P44]**Systems and Methods for Lane-Change Prediction with Federated Learning

- Runjia Du, Ziran Wang, Rohit Gupta, and Kyungtae Han
- U.S. patent application, Filed Jul. 2022

**[P43]**Senior "Aging" Glaucoma Pedestrian Detection Metaverse ADAS

- Rohit Gupta, Paul Li, Ziran Wang, Kyungtae Han, and Satoshi Nagashima
- U.S. patent application, Filed Jul. 2022

**[P42]**Software Driven User Profile Personalized Adaptive Cruise Control

- Rohit Gupta, Ziran Wang, and Kyungtae Han
- U.S. patent application 17/872469, Filed Jul. 2022

**[P41]**Cloud-Based Mobility Digital Twin for Human, Vehicle, and Traffic

- Ziran Wang, Rohit Gupta, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/744452, Filed May 2022

**[P40]**Medical Emergency Detection In-vehicle Caretaker

- Akila Ganlath, Paul Li, Rohit Gupta, Ziran Wang, Satoshi Nagashima, Kyungtae Han, and Nejib Ammar
- U.S. patent application 17/725297, Filed Apr. 2022

**[P39]**Personalized Vehicle Lane Change Maneuver Prediction

- Ziran Wang, Rohit Gupta, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/715011, Filed Apr. 2022

**[P38]**Systems and Methods for Predicting Driver Visual Impairment with Artificial Intelligence

- Rohit Gupta, Zhouqiao Zhao, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/586593, Filed Jan. 2022

**[P37]**Personalized Adaptive Cruise Control based on Steady-State Operation

- Zhouqiao Zhao, Ziran Wang, Rohit Gupta, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/578330, Filed Jan. 2022

**[P36]**Personalized Vehicle Operation for Autonomous Driving with Inverse Reinforcement Learning

- Zhouqiao Zhao, Ziran Wang, Rohit Gupta, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/572486, Filed Jan. 2022

**[P35]**Method and System for Personalized Car Following with Transformers

- Ziran Wang, Zhouqiao Zhao, Rohit Gupta, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/567504, Filed Jan. 2022

**[P34]**Apparatus and Method for Cooperative Escape Zone Detection

- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/509711, Filed Oct. 2021

**[P33]**Cooperative Artificial Intelligent Assisted Driving
- Jianyu Su, Rui Guo, and Ziran Wang
- U.S. patent application 17/475306, Filed Sep. 2021

**[P32]**Subconscious Big Picture Macro and Split Second Micro Decisions ADAS
- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/471100, Filed Sep. 2021

**[P31]**Systems and Methods for Protecting a Vehicle at an Intersection
- Rohit Gupta, Ziran Wang, Yanbing Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/411831, Filed Aug. 2021

**[P30]**Driver Classification Systems and Methods for Obtaining an Insurance Rate for a Vehicle
- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/410536, Filed Aug. 2021

**[P29]**Hybrid Deterministic Override of Probabilistic Advanced Driving Assistance Systems (ADAS)
- Rohit Gupta, Yanbing Wang, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/398666, Filed Aug. 2021

**[P28]**Student-T Process for Personalized Adaptive Cruise Control
- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/388488, Filed Jul. 2021

**[P27]**System and Methods for Personalizing Adaptive Cruise Control in a Vehicle
- Yanbing Wang, Ziran Wang, Kyungtae Han, Rohit Gupta, and Prashant Tiwari
- U.S. patent application 17/387045, Filed Jul. 2021

**[P26]**Vehicular Topple Risk Notification
- Rohit Gupta, Ziran Wang, Yanbing Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/385012, Filed Jul. 2021

**[P25]**Detection, Classification, and Prediction of Bacteria Colony Growth in Vehicle Passenger Cabin
- Rohit Gupta, Ziran Wang, Yanbing Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/373050, Filed Jul. 2021

**[P24]**Systems and Methods to Reduce Audio Distraction for a Vehicle Driver
- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/333616, Filed Jun. 2021

**[P23]**Methods and Systems for Rideshare Implicit and Explicit Needs Personalization
- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- China patent application, Filed Mar. 2021

**[P22]**Methods and Systems for Rideshare Implicit and Explicit Needs Personalization
- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- Japan patent application, Filed Mar. 2021

**[P21]**Methods and Systems for Rideshare Implicit and Explicit Needs Personalization
- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/217358, Filed Mar. 2021

**[P20]**Determining a Setting for a Cruise Control
- Kyungtae Han, Ziran Wang, Prashant Tiwari, John Lenneman, Toshinori Esaka, Miles Johnson, and Chase Violetta
- U.S. patent application 17/216924, Filed Mar. 2021

**[P19]**Vehicle Guard Rail System

- Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/206706, Filed Mar. 2021

**[P18]**Systems and Methods for Estimating Motion of an Automated Vehicle for Cooperative Driving
- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/196016, Filed Mar. 2021

**[P17]**System and Method for Scheduling Connected Vehicles to Cross Non-Signalized Intersections
- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/193278, Filed Mar. 2021

**[P16]**Cooperative Driving Systems and Method
- Sergei Avedisov, Ziran Wang, Ahmed Sakr, Kyungtae Han, Rui Guo, and Onur Altintas
- U.S. patent application 17/174998, Filed Feb. 2021

**[P15]**Producing, for an Autonomous Vehicle, a Route from an Origination to a Destination
- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/168582, Filed Feb. 2021 | U.S. patent 11634163, Granted Apr. 2023

**[P14]**System and Method for Connected Vehicle Lane Merge
- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 17/031095, Filed Sep. 2020

**[P13]**System and Methods for Providing Guidance to Vehicle Drivers Regarding Predicted Lane-Change Behavior of Vehicle Drivers
- Zhenyu Shou, Kyungtae Han, Ziran Wang, Yongkang Liu, and Prashant Tiwari
- U.S. patent application 16/999332, Filed Aug. 2020 | U.S. patent 11151880, Granted Oct. 2021

**[P12]**Rest Stop Recommendation System
- Zhenyu Shou, Ziran Wang, Kyungtae Han, Yongkang Liu, and Prashant Tiwari
- U.S. patent application 16/998529, Filed Aug. 2020

**[P11]**Identifying a Specific Object in a Two-Dimensional Image of Objects
- Yongkang Liu, Ziran Wang, Kyungtae Han, Zhenyu Shou, and Prashant Tiwari
- U.S. patent application 16/927467, Filed Jul. 2020 | U.S. patent 11222215, Granted Jan. 2022

**[P10]**Systems and Methods for Long-Term Prediction of Lane Change Maneuver
- Zhenyu Shou, Ziran Wang, Kyungtae Han, Yongkang Liu, and Prashant Tiwari
- U.S. patent application 16/897386, Filed Jun. 2020

**[P9]**Adjustable Blind Spot Monitor
- Ziran Wang, Kyungtae Han, and BaekGyu Kim
- China patent application 202010223851.8, Filed Mar. 2019

**[P8]**Adjustable Blind Spot Monitor
- Ziran Wang, Kyungtae Han, and BaekGyu Kim
- Japan patent application 2020-048606, Filed Mar. 2019

**[P7]**Ramp Merging Assistance
- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 16/781211, Filed Feb. 2020

**[P6]**Systems and Methods for Compensating for Driver Speed-Tracking Error
- Ziran Wang, Kyungtae Han, and Prashant Tiwari
- U.S. patent application 16/775772, Filed Jan. 2020 | U.S. patent 11087623, Granted Aug. 2021

**[P5]**Longitudinal Motion Control of Connected and Automated Vehicles

- Ziran Wang, Hiromitsu Kobayashi, Kyungtae Han, and BaekGyu Kim
- U.S. patent application 16/364851, Filed May 2019 | U.S. patent 11214253, Granted Jan. 2022

**[P4]**Adjustable Blind Spot Monitor
- Ziran Wang, Kyungtae Han, and BaekGyu Kim
- U.S. patent application 16/364851, Filed Mar. 2019 | U.S. patent 11328605, Granted May 2022

**[P3]**Vehicle-to-Everything Communication-Based Lane Change Collision Avoidance Warning
- Ziran Wang, Kyungtae Han, and BaekGyu Kim
- U.S. patent application 16/295700, Filed Mar. 2019 | U.S. patent 11697410, Granted Jul. 2023

**[P2]**Virtualized Driver Assistance
- Ziran Wang, BaekGyu Kim, and Hiromitsu Kobayashi
- U.S. patent application 16/268729, Filed Feb. 2019

**[P1]**XR-based Slot Reservation System For Connected Vehicles Traveling Through Intersections
- Ziran Wang, Kyungtae Han, and BaekGyu Kim
- U.S. patent application 16/264475, Filed Jan. 2019 | U.S. patent 11257363, Granted Feb. 2022

## PROFESSIONAL ACTIVITIES

### *As a Journal Editor*

Associate editor of *IEEE Internet of Things Journal* *Oct. 2022 - Present*
Associate editor of *IEEE Transactions on Intelligent Vehicles* *Jun. 2022 - Present*
Guest editor of *IEEE Open Journal of Intelligent Transportation Systems* *May 2022 - Present*
Associate editor of *Frontiers in Sustainable Cities-Urban Transportation Systems and Mobility* *Sep. 2021 - Present*
Handling editor of *SAE Non-Event Technical Papers* *Apr. 2021 - Present*
Associate editor of *SAE International Journal of Connected and Automated Vehicles* *Jun. 2020 - Present*

### *As a Conference Committee Chair/Member*

Program Chair of 2024 IEEE Forum on Integrated and Sustainable Transportation Systems *Feb. 2024*
Member of Organizing Committee in the *2023 TRB Innovations in Travel Analysis and Planning Conference* *Jun. 2023*
Member of Technical Program Committee in the *1st IEEE International Conference on Mobility (MOST)* *May. 2023*
Member of Technical Program Committee in the *14th ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)* *May. 2023*
Poster/Demo Co-Chair in the *2023 IEEE Vehicular Networking Conference (VNC)* *Apr. 2023*
Member of International Advisory Committee in the *16th IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI 2022)* *Dec. 2022*
Member of Technical Program Committee in the *2021 IEEE 94th Vehicular Technology Conference: VTC2021-Fall.* *Sep. 2021*
Member of Technical Program Committee in the *2021 IEEE International Conference on Digital Twin and Parallel Intelligence (DTPI)* *Jul. 2021 - Aug. 2021*

### *As a Technical Committee Chair/Member*

Member of the Advisory Board of the SAE MobilityRxiv *Nov. 2021 - Present*
Member of Technical Committee on Artificial Intelligence, SAE China *Oct. 2021 - Present*
Founding Chair of Technical Committee on Internet of Things in Intelligent Transportation Systems, IEEE ITS Society *Mar. 2021 - Present*
Member of Technical Committee on Cooperative and Connected Vehicles, IEEE ITS Society *Feb. 2021 - Present*
Member of SAE On Road Automated Driving (ORAD) Simulation Task Force *Nov. 2020 - Nov. 2021*
Member of Technical Committee on Industrial CPS, IEEE Industrial Electronics Society *Jul. 2020 - Present*
Member of Technical Committee on Smart Cities, IEEE Control Systems Society *Jun. 2020 - Present*

### *As a Society Member*

Member of Society of Automotive Engineers (SAE) *Jan. 2018 - Present*
Member of Southern California Chinese-American Environmental Protection Association (SCCAEPA) *Feb. 2017 - Present*
Member of International Chinese Transportation Professionals Association (ICTPA) *Feb. 2017 - Present*
Member of Chinese Overseas Transportation Association (COTA) *Jan. 2017 - Present*
Friend of Transportation Research Board (TRB) Standing Committee: Vehicle-Highway Automation *Jan. 2017 - Present*
Member of Intelligent Transportation Systems Society (ITSS), IEEE *Sep. 2016 - Present*
Member of Institute of Electrical and Electronics Engineers (IEEE) *Sep. 2016 - Present*

***As a Workshop/Tutorial Organizer***

Workshop Organizer of the *2023 IEEE Intelligent Vehicles Symposium (IV)*, 3rd Workshop on Internet of Things in Intelligent Transportation Systems: Opportunities and Challenges, Anchorage, AK *Jun. 2023*
Workshop Organizer of the *25th IEEE International Conference on Intelligent Transportation Systems (ITSC)*, 2nd Special Session on Cooperative Driving in Mixed Traffic, Macau, China *Sep. 2022*
Tutorial Organizer of the *59th Design Automation Conference (DAC)*, Tutorial on Cloud Computing and Edge Computing for Connected and Automated Vehicles, San Francisco, CA *Jul. 2022*
Workshop Organizer of the *24th IEEE International Conference on Intelligent Transportation Systems (ITSC)*, 2nd Workshop on Internet of Things in Intelligent Transportation Systems, Indianapolis, IN *Sep. 2021*
Workshop Organizer of the *2021 IEEE Intelligent Vehicles Symposium (IV)*, Cooperative Driving in Mixed Traffic Workshop, Nagoya, Japan *Jul. 2021*
Workshop Organizer of the *2020 IEEE Intelligent Vehicles Symposium (IV)*, Internet of Things in Intelligent Transportation Systems: Opportunities and Challenges Workshop, Virtual *Oct. 2020*
Workshop Organizer of the *23rd IEEE International Conference on Intelligent Transportation Systems (ITSC)*, Testing and Evaluation CAVs Using Emerging Simulation Technologies Workshop, Virtual *Sep. 2020*
Workshop Organizer of the *4th IEEE Conference on Control Technology and Applications (CCTA)*, Automotive Control Invited Sessions, Virtual *Aug. 2020*

***As a Reviewer***

Reviewer of *MDPI Remote Sensing* *Apr. 2022 - Present*
Reviewer of *IEEE Robotics and Automation Letters* *Mar. 2022 - Present*
Reviewer of *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* *Mar. 2022 - Present*
Reviewer of *Transportation Research Part B: Methodological* *Mar. 2022 - Present*
Reviewer of *Applied Energy* *Oct. 2021 - Present*
Reviewer of *IEEE Transactions on Industrial Informatics* *Sep. 2021 - Present*
Reviewer of *Physica A: Statistical Mechanics and its Applications* *Jul. 2021 - Present*
Reviewer of *Connection Science* *Jul. 2021 - Present*
Reviewer of *Simulation Modelling Practice and Theory* *Jun. 2021 - Present*
Reviewer of *Transportation Research Part C: Emerging Technologies* *Apr. 2021 - Present*
Reviewer of *IEEE Transactions on Transportation Electrification* *Feb. 2021 - Present*
Reviewer of *IEEE Transactions on Systems, Man and Cybernetics: Systems* *Jan. 2021 - Present*
Reviewer of *Automatica* *Dec. 2020 - Present*
Reviewer of *IEEE Transactions on Control Systems Technology* *Dec. 2020 - Present*
Reviewer of *Journal of Traffic and Transportation Engineering* *Nov. 2020 - Present*
Reviewer of *IEEE Vehicular Technology Magazine* *Nov. 2020 - Present*
Reviewer of *Transportation Research Part D: Transport and Environment* *Nov. 2020 - Present*
Reviewer of *Information Sciences* *Oct. 2020 - Present*
Reviewer of *Journal of Selected Topics in Signal Processing* *Sep. 2020 - Present*
Reviewer of *Serbian Journal of Electrical Engineering* *Aug. 2020 - Present*
Reviewer of *IEEE Transactions on Control of Network Systems* *Jul. 2020 - Present*
Reviewer of *MDPI Multimodal Technologies and Interaction* *May 2020 - Present*

Reviewer of *MDPI Applied Science* *May 2020 - Present*
Reviewer of *IEEE Forum on Integrated and Sustainable Transportation Systems* *Mar. 2020 - Present*
Reviewer of *International Journal of Automotive Technology* *Feb. 2020 - Present*
Reviewer of *MDPI Sensors* *Feb. 2020 - Present*
Reviewer of *Journal of Intelligent Transportation Systems* *Jan. 2020 - Present*
Reviewer of *International Journal of Transportation Science and Technology* *Jan. 2020 - Present*
Reviewer of *MDPI Information* *Jan. 2020 - Present*
Reviewer of *IEEE Open Journal of Intelligent Transportation Systems* *Dec. 2019 - Present*
Reviewer of *IEEE Vehicular Technology Conference* *Nov. 2019 - Present*
Reviewer of *MDPI Vehicles* *Nov. 2019 - Present*
Reviewer of *IEEE Transactions on Intelligent Vehicles* *Oct. 2019 - Present*
Reviewer of *IEEE Access* *Aug. 2019 - Present*
Reviewer of *Journal of Control, Automation and Electric Systems* *Apr. 2019 - Present*
Reviewer of *IEEE Conference on Control Technology and Applications* *Mar. 2019 - Present*
Reviewer of *SAE International Journal of Connected and Automated Vehicles* *Oct. 2018 - Present*
Reviewer of *American Control Conference (ACC)* *Oct. 2018 – Present*
Reviewer of *Transportation Research Record (TRR)* *Aug. 2018 - Present*
Reviewer of *International Conference on Computer Science and Application Engineering (CSAE)* *Aug. 2018 - Present*
Reviewer of *Journal of Advanced Transportation* *Jul. 2018 - Present*
Reviewer of *IEEE International Conference on Intelligent Transportation Systems (ITSC)* *May 2018 - Present*
Reviewer of *Case Studies on Transport Policies (CSTP)* *May 2018 - Present*
Reviewer of *IEEE Intelligent Vehicles Symposium* *Mar. 2018 - Present*
Reviewer of *IET Intelligent Transport Systems* *Jan. 2018 - Present*
Reviewer of *ASCE International Conference on Transportation & Development (ICTD)* *Dec. 2017 - Present*
Reviewer of *SAE Technical Papers* *Oct. 2017 - Present*
Reviewer of *TRB Annual Meeting* *Sep. 2017 - Present*
Reviewer of *IEEE Transactions on Intelligent Transportation Systems* *Jun. 2017 - Present*
Reviewer of *COTA International Conference of Transportation Professionals (CICTP)* *Feb. 2017 - Present*

***As a Volunteer***

Organizer of *2018 IEEE 21st ITSC*, Maui, HI *Nov. 2018*
Onsite support of Humanplus Intelligent Robotics Technology Co., Ltd. on CES 2018, Las Vegas, NV *Jan. 2018*
Organizer of Chinese Institute of Engineers (CIE) So-Cal Chapter Annual Convention, Rowland Heights, CA *Sep. 2017*
Organizer of *2017 IEEE IV Symposium*, Redondo Beach, CA *Jun. 2017*
Onsite support of UISEE Technology Co., Ltd. on CES 2017, Las Vegas, NV *Jan. 2017*

## TEACHING EXPERIENCE

**Intelligent Transportation Systems** (Purdue CE 597) *Aug. 2023 - Dec. 2023*
- Delivered a semester of lectures independently as the sole instructor of the course
- Introduced intelligent sensing and control technologies in transportation systems

**Vehicular Cyber-Physical Systems** (Purdue CE 597) *Jan. 2023 - May 2023*
- Delivered a semester of lectures independently as the sole instructor of the course
- Introduced cyber-physical systems and its applications in the automotive domain

**Next Generation Mobility** (Purdue CE 299) Sep. 2022
- Conducted 2 hours of lecture independently as a rotating lecturer of the course
- Introduced digital twin and connected and automated vehicle technologies

**Intelligent Transportation Systems** (UCR EE 246) Oct. 2018

- Delivered 2 hours of lecture independently as a rotating lecturer of the course
- Introduced car-following models, cooperative adaptive cruise control, and simulation tools

**Feedback Control** (UCR ME 121) *Mar. 2017 - Jun. 2017*

- Delivered 20 hours of discussion sessions independently as a teaching assistant of the course
- Introduced the analysis and design of feedback control systems using classical control methods, including block diagrams, closed-loop stability, root locus, Bode plots, and etc.

**Mechanical Engineering Modeling and Analysis** (UCR ME 118) *Jan. 2017 - Mar. 2017*

- Delivered 20 hours of discussion sessions independently as a teaching assistant of the course
- Introduced data analysis and modeling used in engineering through MATLAB, including descriptive and inferential statistics, fitting linear and nonlinear models to observed data, numerical differentiation and integration, etc.

**Introduction to Engineering Computation** (UCR ME 018) *Sep. 2016 - Dec. 2016*

- Delivered 60 hours of lab sessions independently as a teaching assistant of the course
- Introduced the use of MATLAB in engineering computation, including scripts and functions, programming, input/output, two and three-dimensional graphics, elementary numerical analysis, etc.

## STUDENT MENTORING

***Mentoring at Purdue***

- Zichong Yang (co-advise), *now*: Ph.D. student in Mechanical Engineering @Purdue
- Yupeng Zhou (co-advise), *now*: M.S. student in Mechanical Engineering @Purdue
- Juanwu Lu, *now*: Ph.D. student in Civil Engineering @Purdue
- Can Cui, *now*: Ph.D. student in Civil Engineering @Purdue
- Yunsheng Ma, *now*: Ph.D. student in Civil Engineering @Purdue
- Zihao Li, *now*: M.S. student in Electrical and Computer Engineering & Civil Engineering @Purdue
- Liangqi Yuan (co-advise), *now*: Ph.D. student in Electrical and Computer Engineering @Purdue
- Vishnu Chellapandi (co-advise), *now*: Ph.D. student in Electrical and Computer Engineering @Purdue

***Mentored at Toyota***

- Runjia Du, 2022 summer intern @Toyota, *now*: Ph.D. candidate in Civil Engineering @Purdue
- Zhouqiao Zhao, 2021 summer intern @Toyota, *now*: Post-doc scholar @MIT
- Yanbing Wang, 2021 spring intern @Toyota, *now*: Ph.D. student in Civil Engineering @Vanderbilt
- Jianyu Su, 2021 spring intern @Toyota, *now*: ML Engineer @JD.com
- Yongkang Liu, 2020 winter intern @Toyota, Ph.D. student in EE @UT Dallas, *now:* ML Engineer @Toyota
- Zhenyu Shou, 2020 winter intern @Toyota, *now*: Ph.D. student in Civil Engineering @Columbia
- Xianguo Liu, 2019 summer intern @Toyota, *now*: Ph.D. candidate in ECE @Northwestern

***Mentored at UCR***

- Xishun Liao, M.S. student in ME @UMD & summer research intern @UCR, *now*: Post-doc scholar @UCLA
- Yuan-Pu Hsu, M.S. student in ECE @UCR, *now:* Software Engineer @Cruise
- Francisco Caballero, B.S. student in CS @CSUSB
- Xuanpeng Zhao, B.S. & M.S. student in ECE @UCR, *now:* Ph.D. candidate in ECE @UCR
- Yu Jiang, B.S. & M.S. student in ECE @UCR, *now:* Algorithm Engineer @IQHi Inc
- Pingbo Ruan, B.S. & M.S. student in ECE @UCR, *now:* M.S. student in ECE @UCR
- Shangrui Liu, B.S. & M.S. student in ECE @UCR, *now:* M.S. student in ECE @UCR
- Hangquan Zhao, B.S. student in ECE @UCR, *now:* Software Engineer @Toyota
- Yue You, B.S. student in ECE @UCR, *now:* Software Engineer @WeRide
- Yu Wang, M.S. student in ME @UCR

## HONORS & AWARDS

IEEE-ITSM Outstanding Survey Paper Award, IEEE Intelligent Transportation Systems Magazine *Jun. 2023*
First Prize in the 2021 "Shape the Future of ITS" Competition, IEEE Intelligent Transportation Systems Society *May 2022*
Arch T. Colwell Merit Award (i.e., best paper in 2021), SAE International *Jan. 2022*
Best Application Award, 2021 IEEE International Conference on Digital Twins and Parallel Intelligence (DTPI) *Sep. 2021*
Vincent Bendix Automotive Electronics Engineering Award (i.e., best paper in 2019), SAE International *Feb. 2020*
U.S. Department of Transportation National Center for Sustainable Transportation (NCST) Dissertation Award *Jun. 2018*
Best Student Research Paper Award, Los Angeles Environmental Forum *Aug. 2017*
UCR Dean's Distinguished Fellowship Award *Fall 2015 - Spring 2017*
BUPT Scholarship Award *Jun. 2014 & Jun. 2013*
The Honorable Mention, The Mathematical Contest in Modeling (MCM) *Feb. 2014*

## INVITED TALKS

**Mobility Digital Twin for Connected and Automated Vehicles**
- The University of Queensland Seminar Series, Virtual, Apr. 2023

**Digital Twin Simulation for Connected and Automated Vehicles**
- Purdue Rosen Center for Advanced Computing (RCAC) Digital Twins Symposium, West Lafayette, IN, Apr. 2023

**Augmented Reality-Based Advanced Driver-Assistance Systems for Connected and Automated Vehicles**
- 2022 IEEE International Conference on Systems, Man, and Cybernatics, Prague, Czech Republic, Oct. 2022

**Mobility Digital Twin for Connected and Automated Vehicles**
- Purdue Institute for Control, Optimization, and Networks (ICON) Seminar, West Lafayette, IN, Oct. 2022

**Mobility Digital Twin for Connected and Automated Vehicles**
- Modeling, Estimation and Control Conference (MECC) 2022, Jersey City, NJ, Oct. 2022

**Cloud Computing and Edge Computing for Connected and Automated Vehicles**
- 59$^{th}$ Design Automation Conference, San Francisco, CA, Jul. 2022

**Mobility Digital Twin for Connected and Automated Vehicles**
- Bosch Research Colloquium, Virtual, Jul. 2022

**Digital Twin for Future Mobility**
- IEEE 18$^{th}$ International Conference on Intelligent Environments (IE2022), Biarritz, France, Jun. 2022

**Mobility Digital Twin: An AI-Based Data-Driven Vehicle-Edge-Cloud Framework**
- NSF Workshop: The Frontiers of Artificial Intelligence-Empowered Methods and Solutions to Urban Transportation Challenges, Seattle, WA, Jun. 2022

**The Role of Digital Twins in Connected and Automated Vehicles**
- ASCE International Conference on Transportation & Development (ICTD), Seattle, WA, Jun. 2022

**Mobility Digital Twin for Connected Vehicles and Edge/Cloud Computing**
- Design, Automation, and Test in Europe Conference (DATE 2022), Mar. 2022

**Mobility Digital Twin for Connected and Automated Vehicles**
- 25$^{th}$ COTA Annual Winter Symposium, Washington D.C., Jan. 2022

**Mobility Digital Twin with Connected Vehicles and Cloud Computing**
- Columbia University NSF Project Meeting, Dec. 2021

**Cooperative Motion Planning and Control at Ramp Merging: A Field Experiment**
- 2021 Conference on Control Technology and Applications (CCTA) Workshop, Aug. 2021

**AI and Transportation Technology - Panel Discussion**

- The ITE Virtual Student Leadership Summit, Feb. 2021

**A Digital Twin Paradigm: Vehicle-to-Cloud Based Advanced Driver Assistance Systems**

- 23rd COTA Annual Winter Symposium, Washington D.C., Jan. 2020

**Unity3D-Based AV Simulation with V2X Communication and Human-in-the-Loop Integration**

- Automated Vehicles Symposium, Orlando, FL, Jul. 2019

**Eco-Friendly Applications in Connected and Automated Vehicle Technology**

- University of California, Riverside CE-CERT Open House, Riverside, CA, Oct. 2018

**Connected Eco-Bus: An Innovative Vehicle Powertrain Eco-Operation System for Efficient Plug-In Hybrid Electric Buses**

- ARPA-E NEXTCAR 2018 Annual Meeting, Southfield, MI, Apr. 2018

**Connected and Automated Vehicle Research at UCR**

- University of California, Riverside Extension, Riverside, CA, Jan. 2018

**Developing a Platoon-Wide Eco-Cooperative Adaptive Cruise Control (CACC) System**

- Los Angeles Environmental Forum, San Gabriel, CA, Aug. 2017

**Distributed Consensus-Based Cooperative Adaptive Cruise Control (CACC) Systems**

- TuSimple Technology Co., Ltd., San Diego, CA, Jul. 2017

## MEDIA EXPOSURES

**Digital Twins: An On-Ramp to Autonomous Driving**, Medium, Mar. 2023

**Former Researcher at Toyota Research Institute of America Reveals Autonomous Driving Digital Twin Experiment**, Nikkei Cross Tech (xTech), Aug. 2022

**NCST Partner CE-CERT Takes Eco-Driving Simulator to CES**, National Center for Sustainable Transportation, *Jan. 2020*

**Testing a Connected Eco-Driving System in Field Trials with Heavy-Duty Trucks**, Featured News, Tech Xplore, *Aug. 2019*

**Steering into the Future of Connected and Automated Vehicles**, UCR News, *Jul. 2019*