Xiaowei Chen

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EDUCATION

- **Ph.D. in Transportation and Infrastructure System** **2024**
  Purdue University, IN, US
  Advisor: Dr. Satish V Ukkusuri
  Dissertation: *Advancing Operational Algorithms for Electric Mobility Systems Modeling*

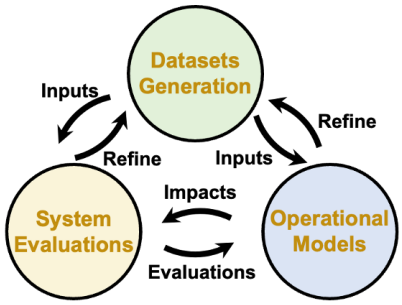
- **M.S. in Traffic Control and Information Engineering** **2019**
  Zhejiang University, Zhejiang, China
  Advisor: Dr. Xiqun Chen
  Dissertation: *Reinforcement Learning-Based Optimal Dispatching for On-Demand Ride Services*

- **B.S. in Transportation Engineering** **2016**
  Jilin University, Jilin, China
  Dissertation: *Pedestrian crossing characterization based on video processing*

RESEARCH INTERESTS

My research centers on optimizing Electric and Shared Mobility systems to enhance efficiency, robustness, and sustainability, by integrating data analysis, machine learning, and reinforcement learning techniques, optimization methodologies, and agent-based simulator development.

- Synthesis Datasets Generation & Data Analytics: Use multi-source data to analyze travelers' mobility needs and generate comprehensive datasets, including trip and socio-demographic information.
- Operational Model Development: Focus on designing EV energy consumption models, energy-efficient routing, and charging control strategies.
- System Performance & Equity Evaluation: Evaluate public charging demand, ride-hailing cost impacts, and equity in charging infrastructure distribution.



TEACHING INTERESTS

- Big Data in Transportation
- Transportation Engineering
- Intelligent Transport System
- Traffic control and optimization

RESEARCH EXPERIENCE

- **Postdoctoral Associate** 06/2024 - present
  Lyles School of Civil Engineering, Purdue University
  - Write research proposals (DOE EERE/INDOT/Purdue seed grant) and conduct research on electric mobility optimization and operation.
  - Lead the INDOT projects in simulating current and future Electric vehicles (EV) growth scenarios in Indiana and conducting an equity assessment.
  - Mentor one Ph.D. student and three Master students.
- **Graduate Research Assistant** 08/2019 - 06/2024
  Lyles School of Civil Engineering, Purdue University
  - INDOT: Simulating current and future EV growth scenarios in Indiana (SPR 4811)
  - INDOT: Electric vehicles: public perceptions, expectations, and willingness-to-pay across highway user groups (vehicle classes) (SPR 4706).
  - DOE EERE: Multimodal Energy-optimal Trip Scheduling in Real-time (METS-R) for Transportation Hubs.
  - Mentor one Ph.D. student and two Master students.
- **Graduate Research Assistant** 09/2016 - 06/2019
  College of Civil Engineering and Architecture, Zhejiang University, China
  - National Natural Science Foundation of China: Evolutionary Mechanism and Control Strategies Optimization for On-Demand Ride Services Based on Connected Mobile Big Data. (71771198)
  - Fundamental Research Funds for the Central Universities: Ride-Sourcing Demand Forecasting Based on Deep Learning (2017QNA4025)
  - DiDi Chuxing: Transportation Big Data Analysis.
  - DiDi Chuxing: Reliability Analysis of Urban Traffic in China.

TEACHING EXPERIENCE

- **Teaching Assistant & Guest Lecturer**

  Purdue University, West Lafayette, Fall 2024

  CE569: Smart Logistics (Graduate level)
  - Involved in the design of slides
  - Delivered lectures on integration of Artificial Intelligence in Smart Logistics
- **Mentoring**:
  - One Ph.D. student in Civil Engineering, Purdue University
  - Three Master's students in Civil Engineering, Shenzhen Technology University, China.

PUBLICATIONS

- **Under Review**

1. **Chen, X.**, Hamim, O. F., And Ukkusuri, S. V. Electric Vehicle Trips Detection and Synthesis via Cellular Data. Submitted to *Expert Systems With Applications*, (Second round review. 05/2024).
2. **Chen, X.**, Hamim, O. F., Moras, B.C.K., Gkritza, K., and Ukkusuri, S. V. Future Electric Vehicle Usage Forecasting Using Sequential Generative Adversarial Networks. Under review in *Transportation Research Part D: Transport and Environment*, (07/2024).
3. **Chen, X.**, Wang, Z., Lei, T., and Ukkusuri, S. V. Advanced Charging Strategies for EVs: Integrating Power-Sharing at Public Stations. Under review in *IEEE Transactions on Intelligent Transportation Systems*, (07/2024).

- **Refereed Journal Articles**

1. **Chen, X.**, Lei, Z., And Ukkusuri, S. V. Modeling the Influence of Charging Cost in Electric Ride-hailing Vehicles. *Transportation Research Part C: Emerging Technologies*, Vol. 160, p.104514 (2024).
2. Lei, Z., Xue, J., **Chen, X.**, Qian, X., Saumya, C., He, M., Sobolevsky, S., Kulkarni, M. and Ukkusuri, S.V. METS-R SIM: A simulator for multimodal Energy-optimal Trip Scheduling in Real-time with shared autonomous electric vehicles. *Simulation Modelling Practice and Theory*, p.102898 (2024).
3. Verma, R., Mittal, S., Lei, Z., **Chen, X.**, and Ukkusuri, S. V. Comparison of home detection algorithms using smartphone GPS data. *EPJ Data Science*, 13(1), p.6. (2024).
4. **Chen, X.**, Qian, X., Lei, Z., Jue, X. And Ukkusuri, S. V. Online eco-routing for electric vehicles using combinatorial multi-armed bandit with estimated covariance. *Transportation Research Part D: Transport and Environment*, Vol. 111, 103447 (September 2022).
5. He, M., Muaz, U., Jiang, H., Lei, Z., **Chen, X.**, Ukkusuri, S. V., and Sobolevsky, S. Ridership prediction and anomaly detection in transportation hubs: an application to New York City. The *European Physical Journal* Special Topics, 1-17 (2022).
6. **Chen, X.**, Zheng, H., Wang, Z. and Chen, X. Exploring impacts of on-demand ridesplitting on mobility via real-world ridesourcing data and questionnaires. The *Transportation*, 48(4), pp.1541-1561 (2021).
7. Chen, X.M., **Chen, X.**, Zheng, H. and Xiao, F. Efficient dispatching for on-demand ride services: Systematic optimization via Monte-Carlo tree search. The *Transportation Research Part C: Emerging Technologies*, Vol. 127, p.103156 (2021).
8. Wang, Z., **Chen, X.** and Chen, X.M. Ridesplitting is shaping young people's travel behavior: Evidence from comparative survey via ride-sourcing platform. The *Transportation research part D: transport and environment*, Vol. 75, pp.57-71 (2019).
9. Zheng, H., **Chen, X.** and Chen, X.M. How does on-demand ridesplitting influence vehicle use and purchase willingness? A case study in Hangzhou, China. The *IEEE Intelligent Transportation Systems Magazine*, 11(3), pp.143-157 (2019).

10. Chen, X.M., **Chen, X.**, Zheng, H. and Chen, C. Understanding network travel time reliability with on-demand ride service data. The *Frontiers of Engineering Management*, 11(3), 4(4), pp.388-398 (2017).

- **Refereed Conference Proceedings**

1. **Chen, X.**, Hamim, O. F., Moras, B.C.K., Gkritza, K., and Ukkusuri, S. V. Estimation of Electric Vehicle Adoption Rates Using Sequential Generative Adversarial Networks. Proceedings by the *IEEE International Conference on Intelligent Transportation Systems* (ITSC 2024).
2. **Chen, X.**, Hamim, O. F. And Ukkusuri, S. V. Detecting Electric Vehicle Trips via Cellular Data. Accepted for presentation at the *Transportation Research Board Conference* (2024).
3. **Chen, X.**, Lei, Z. And Ukkusuri, S. V. Prediction of Road-level Energy Consumption of Battery Electric Vehicles. Proceedings by the *IEEE International Conference on Intelligent Transportation Systems* (ITSC 2022).
4. Lei, Z., Xue, J., **Chen, X.**, Saumya, C., Qian, X., He, M., Sobolevsky, S. and Ukkusuri, S.V. ADDS-EVS: An agent-based deployment decision-support system for electric vehicle services. Proceedings by the *IEEE International Conference on Intelligent Transportation Systems* (ITSC 2021).
5. **Chen, X.**, Xue, J., Qian, X., Suarez, J. and Ukkusuri, S.V. Online energy-optimal routing for electric vehicles with combinatorial multi-arm semi-bandit. Proceedings of the *IEEE International Conference on Intelligent Transportation Systems* (ITSC 2020), pp. 1-6 (Rhodes, Greece, September 2020).
6. Lei, Z., Qian, X., **Chen, X.** and Ukkusuri, S.V. Real-time Ridesharing for Transportation Hubs with Demand and Supply Uncertainty. Accepted for presentation at *Transportation Research Board Conference* (2020).
7. Zheng, H., **Chen, X.** and Chen, X. How does on-demand ridesplitting influence vehicle use and ownership? A case study in Hangzhou, China. Accepted for presentation at *Transportation Research Board Conference* (2018).
8. **Chen, X.**, Zheng, H., Wang, Z. and Chen, X.M. Exploring On-Demand Ridesplitting Behavior and Impact on Mobility: a Case Study in Hangzhou, China. Accepted for presentation at *Transportation Research Board Conference* (2018).
9. Zheng, H., **Chen, X.** and Chen, X. Random Forests for Freeway Short-Term Traffic Speed Prediction. In *CICTP 2017: Transportation Reform and Change—Equity, Inclusiveness, Sharing, and Innovation* (pp. 120-130). Reston, VA: American Society of Civil Engineers (2017).
10. Liu, J., Cui, E., Hu, H., **Chen, X.**, Chen, X. and Chen, F. Short-term forecasting of emerging on-demand ride services. In *2017 4th International Conference on Transportation Information and Safety (ICTIS)* (pp. 489-495). IEEE (August 2017).

PRESENTATIONS *(Only oral presentations are included.)*

1. Estimation of Electric Vehicle Adoption Rates Using Sequential Generative Adversarial Networks. The 27th IEEE International Conference on Intelligent Transportation Systems, Edmonton, Canada, September 24- 27, 2024.

2. Detecting Electric Vehicle Trips via Cellular Data. The 103rd Annual Meeting of Transportation Research Board, Washington DC, United States, January 7-11, 2024.
3. Prediction of Road-level Energy Consumption of Battery Electric Vehicles. The 25th IEEE International Conference on Intelligent Transportation Systems, Macau, China, September 18 - October 12, 2022.
4. Online energy-optimal routing for electric vehicles with combinatorial multi-arm semi-bandit. The 23rd IEEE International Conference on Intelligent Transportation Systems, Rhodes, Greece, Sep 20 - 23, 2020.
5. Exploring on-demand ridesplitting behavior and impact on mobility: A case study in Hangzhou, China. The 97th Annual Meeting of Transportation Research Board, Washington DC, United States, January 7-11, 2018.
6. Random forests for freeway short-term traffic speed prediction. The 17th COTA International Conference of Transportation Professionals, Shanghai, China, July 7-9, 2017.

HONORS AND AWARDS

- 2019 Outstanding Master's Thesis of Zhejiang Province 2019
- National Scholarship (Top 5%) 2017
- Academic Scholarship 2017
- Graduate of Merit/Triple-A Graduate 2017
- Award of Honor for Graduate Students 2017
- Third Prize of the Joint Research Laboratory of Tongji Didi Smart Travel, Network Car and Urban Transport (Major participators) 2017
- Outstanding Student Leader Awards 2016
- Transportation College Scholarship (Top 10%) 2013, 2014, 2015
- National Computer Rank Examination Certificate of Level 2 2014
- Outstanding Student Club Leader Awards 2013

SERVICES

- **Reviewer**:
  - **Journal**: Transportmetrica B: Transport Dynamics · IEEE Transactions on Intelligent Vehicles · IEEE Transactions on Intelligent Transportation Systems · Data Science for Transportation
  - **Conference**: Transportation Research Board · International Conference on Intelligent Transportation Systems
- **Diversity and Inclusion Initiatives** : Women in Engineering: Coordinate outdoor activities such as skiing and hiking · Organize kick-off transportation dinners each semester