Kaifa Lu-CV (2023-01-14)

KAI-FA LU

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RESEARCH INTERESTS

- **Transportation Network Modeling and Optimization**
- **Artificial Intelligence-Enabled Urban Planning**
- **Urban Resilience**
- **Microtransit and Micromobility**
- **Machine Learning and Deep Learning**

EDUCATION

University of Florida, Gainesville, Florida, USA 2021.08-now
Ph.D Student in Urban and Regional Planning, ***Research Assistant*** (GPA: 3.91)
Advisor: Prof. Zhong-Ren Peng

Shanghai Jiao Tong University, Shanghai, China 2018.09-2021.03
M.S. in Transportation Engineering
Thesis: Characterization of Traffic-related Pollutant Distribution Patterns Under Urban Viaduct and Street Canyon

Central South University, Changsha, Hunan, China 2014.09-2018.06
B.E. in Transportation
Thesis: Optimization of Local Road Network and Vehicle Routing Problem in Changsha South Railway Station

JOURNAL PAPER PUBLICATIONS

[1] **Lu, K.**, Peng, Z. (2023). Impacts of Viaduct and Geometry Configurations on the Distribution of Traffic-related Particulate Matter in Urban Street Canyon. *Science of the Total Environment*, 858, 159902. https://doi.org/10.1016/j.scitotenv.2022.159902

[2] **Lu, K.**, Wang, H., Li, X., et al. (2022). Assessing the Effects of Non-local Traffic Restriction Policy on Urban Air Quality. *Transport Policy*, 115, 62-74. https://doi.org/10.1016/j.tranpol.2021.11.005

[3] **Lu, K.**, He, H., Wang, H., et al. (2020). Characterizing Temporal and Vertical Distribution Patterns of Traffic-emitted Pollutants near an Elevated Expressway in Urban Residential Areas. *Building and Environment*, 172, 106678. https://doi.org/10.1016/j.buildenv.2020.106678

[4] Zhu, X., He, H., **Lu, K.**, et al. (2022). Characterizing Carbon Emissions from China V and China VI Gasoline Vehicles Based on Portable Emission Measurement Systems. *Journal of Cleaner Production*, 378(10), 134458. https://doi.org/10.1016/j.jclepro.2022.134458

[5] Zhao, H., He, H., **Lu, K.**, et al. (2022). Characterizing the Distribution Pattern of Submicron and Coarse Particles on High-density Container Truck Roads through Mobile Monitoring. *Atmospheric Pollution Research*, 13(10), 101561. https://doi.org/10.1016/j.apr.2022.101561

[6] Wang, D., Wang, H., **Lu, K.**, et al. (2022). Regional Prediction of Ozone and Fine Particulate Matter Using Diffusion Convolutional Recurrent Neural Network. *International Journal of Environmental Research and Public Health*, 19(7), 3988. https://doi.org/10.3390/ijerph19073988

[7] Zhao, H., He, H., **Lu, K.**, et al. (2022). Measuring the Impact of an Exogenous Factor: An Exponential Smoothing Model of the Response of Shipping to COVID-19. *Transport Policy*, 118, 91-100. https://doi.org/10.1016/j.tranpol.2022.01.015

[8] Zhu, X., **Lu, K.**, Peng, Z, et al. (2022). Spatiotemporal Variations of Carbon Dioxide (CO2) at Urban Neighborhood Scale: Characterization of Distribution patterns and Contributions of Emission Sources. *Sustainable Cities and Society*, 78, 103646. https://doi.org/10.1016/j.scs.2021.103646

[9] Cai, W., Wang, H., Wu, C., **Lu, K.**, et al. (2021). Characterizing the Interruption-Recovery Patterns of Urban Air Pollution under the COVID-19 Lockdown in China. *Building and Environment*, 205, 108231. https://doi.org/10.1016/j.buildenv.2021.108231

[10] Jia, Y., **Lu, K.**, Zheng, T., et al. (2021). Effects of Roadside Green Infrastructure on Particle Exposure: A Focus on Cyclists and Pedestrians on Pathways Between Urban Roads and Vegetative Barriers. *Atmospheric Pollution Research*, 12, 1-12. https://doi.org/10.1016/j.apr.2021.01.017

[11] Wang, D., Wang, H., Li, C., **Lu, K.**, et al. (2020). Roadside Air Quality Forecasting in Shanghai with a Novel Sequence-to-sequence Model. *International Journal of Environmental Research and Public Health*, 17(24), 9471. https://doi.org/10.3390/ijerph17249471

CONFERENCE PAPERS

[1] **Lu, K.**, Che, L., Peng, Z. (2022). Characterization and Prediction of Transportation Network Resilience: A Spatiotemporal Graph Diffusion Convolutional Recurrent Neural Network Approach. *Transportation Research Board 102nd Annual Meeting*, Washington D.C.

[2] **Lu, K.**, Peng, Z., He, H., et al. (2020). Characterization of Traffic-related Pollutant Distribution Patterns in Urban Residential Areas with an Elevated Expressway. *Transportation Research Board 99th Annual Meeting*, Washington D.C.

[3] Zhu, X., He, H., **Lu, K.**, et al. (2022). Characterizing Carbon Emissions from China V and China VI Gasoline Vehicles Based on Portable Emission Measurement Systems. *Transportation Research Board 102nd Annual Meeting*, Washington D.C.

[4] Lu, D., He, H., Zhao, H., **Lu, K.**, Peng, R. (2022). Characterizing the Traffic-related Carbon Emission Factors on Elevated Roads Based on On-road Measurements. *Transportation Research Board 102nd Annual Meeting*, Washington D.C.

[5] Mazimba, M., Peng, Z., He, H., Zhao, H., **Lu, K**. (2021). Investigating Pedestrians' Exposure to Traffic-Related PM and BC at Intersections: A Case Study in Shanghai, China. *Transportation Research Board 100th Annual Meeting*, Washington D.C. https://trid.trb.org/view/1759782

BOOK CHAPTERS

[1] Peng, Z., **Lu, K.**, Jin, M., et al. (2022). *China's Metro Explosion: Lessons from China's Big Four Cities*. In: Landis, J. D. (eds) Megaprojects for Megacities. Edward Elgar Publishing, Inc., USA. http://dx.doi.org/10.4337/9781803920634

[2] Peng, Z., Zhai, W., **Lu, K.** (2022). *Smart, Sustainable, and Resilient Transportation System*. In: Li, B., Shi, X., Zhu, AX., Wang, C., Lin, H. (eds) New Thinking in GIScience. Springer, Singapore. https://doi.org/10.1007/978-981-19-3816-0_34

PAPERS IN REVIEW

[1] **Lu, K.**, Liu, Y., Peng, Z. (2023). Assessing the Association of Built Environment, Demographics, and Network Characteristics with Mobility Resilience in Transportation Network Against Extreme Weather Events. *Journal of Transport Geography*.

[2] **Lu, K.**, Liu, Y., Che, L., Peng, Z. (2023). Characterization and Prediction of Mobility Resilience in Transportation Network: A Spatiotemporal Graph Diffusion Convolutional Recurrent Neural Network

Approach. *Transportation Research Part C: Emerging Technologies*.

TEACHING

University of Florida, Dept. Urban and Regional Planning, Gainesville, Florida, US

[1] Spring 2022 Transportation and Land Use Modeling Teaching Assistant

Shanghai Jiao Tong University, Dept. Transportation Engineering, Shanghai, China

[2] Spring 2018 Operations Research Teaching Assistant

AWARDS

[1] **The Second Prize** in the National Graduate Mathematical Contest in Modeling, 2019
[2] **The Meritorious Winner** in the America Undergraduate Mathematical Contest in Modeling, 2017
[3] **The First Prize** in the National Undergraduate Mathematical Contest in Modeling, 2016
[4] **The Third Prize** in the National Undergraduate Mathematical Contest, 2015
[5] **National Scholarship** (top 3%), **National Encouragement Scholarship** (top 5%)
[6] **COSCO maritime scholarship** (top 5%), **First-class Scholarship** (top 10%)
[7] **Outstanding graduates of Shanghai** (top 3%), **Outstanding Undergraduates of Hunan Province** (top 3%)

RESEARCH PROJECTS PARTICIPATED

[1] Florida Department of Transportation, Grant Project (BED31_TWO_977-10), *Florida's Transportation Revenue Forecasting and Allocation Process and Modeling – Phase I*, 2022.07-2024.01, Under Research, Principal
[2] Florida Department of Transportation, Grant Project (BDV31_TWO_977-144), *Examining Data Needs and Implementation Process of AV-based Microtransit Service: A Case Study in Lake Nona*, 2021.06-2023.01, Under Research, Core Member
[3] Florida Department of Transportation, Grant Project (BDV31_943-02), *Microtransit and Micromobility Inventory in the State of Florida*, 2021.07-2022.03, Finished, Principal
[4] National Planning Office of Philosophy and Social Science, Major Projects of National Social Science Foundation (16ZDA048), *Study on the Impact of Urban Transportation Policy and Facility Construction on Atmospheric Environment*, 2016.10-2021.06, Finished, Core Member
[5] Ministry of Science and Technology of the People's Republic of China, National Key R & D Program of China (2016YFC0200502), *Vertical Observation Technologies of Atmospheric Pollution Based on Unmanned Aerial Vehicle and Heavy Load Airship*, 2016.07-2021.03, Finished, Member
[6] Shanghai Science and Technology Commission, Major Projects of Shanghai Think Tanks (BH0100011), *Study on the Integrated Decision-making of Data-driven Intelligent Environment Protection Strategies in Shanghai*, 2018.12-2020.06, Finished, Core Member
[7] Hunan Education Commission, Innovation and Entrepreneurship Training Programs for Undergraduates, *RFID-based Automatic Toll System for Roadside Parking*, 2016.06-2017.07, Finished, Core Member
[8] China Academic Degrees & Graduate Education Development Center, National Graduate Mathematical Contest in Modeling, *Construction and Analysis on Vehicle Driving Cycle*, 2019.09, Awarded, Principal
[9] America Consortium for Mathematics and Its Applications, the Undergraduate Mathematical Contest in Modeling, *How Far Autonomous Vehicles Go?* 2017.01, Awarded, Core Member
[10] China Society for Industrial and Applied Mathematics, the National Undergraduate Mathematical Contest in Modeling, *Impacts of Community Opening on Ambient Road Traffic*, 2016.09, Awarded, Core Member

EXPERTISE

Programming Language: PYTHON, MATLAB, R, C
Software: CAD, ORIGIN, ARCGIS, FLUENT, MS OFFICE, TRANSCAD