CURRICULUM VITAE

WENWEN ZHANG

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ACADEMIC APPOINTMENT

Rutgers, The State University of New Jersey

Assistant Professor of Public Informatics 2020 - present

Virginia Polytechnic Institute and State University

Assistant Professor of Urban Affairs and Planning 2017 - 2020

EDUCATION

Georgia Institute of Technology

Ph.D. in City and Regional Planning August 2017
Dissertation: The Interactions between Land Use and Transportation in the Era of Shared Autonomous Vehicle: A Discrete Simulation Model
Committee: Dr. Subhrajit Guhathakurta (Chair), Dr. Steven P. French, Dr. Ram Pendyala, Dr. Richard Fujimoto, Dr. Bistra Dilkina

Master in City & Regional Planning May 2013
M.S. in Civil & Environmental Engineering May 2013
M.S. in Computational Science & Engineering May 2017
Thesis: The Effects of Compact Development on Travel Behavior, Energy Consumption and GHG Emissions: Lessons from Neighborhoods in Phoenix Metropolitan Area
Committee: Dr. Subhrajit Guhathakurta (Chair), Dr. Steven P. French, Dr. Yanzhi Xu

Zhejiang University

B.E. in City & Regional Planning July 2011
Option Paper: Develop Urban Growth Boundary using Cellular Automata Model based on Green Infrastructure Analysis: A Case Study of Chun'An County, China
Advisor: Dr. Yonghua Li

RESEARCH INTERESTS

Emerging Transportation Technology; Shared Mobility; Energy Consumption; Geographic Information Systems; Planning Support System; Big & Open Data; Applied Machine Learning in Urban Studies; Public Informatics .

GRANTS

Behavioral impacts on transportation from COVID-19: Will we be healthier?, EJBS Healthy Communities Grant, 2020-2021, Rutgers University, Co-PI, Total budget: $25,000.

Research objective: Conduct survey and develop statistical and machine learning models to understand the impact of COVID-19 on transportation behavior.

Built Environment Assessment through Computer visiON (BEACON): Applying Deep Learning to Street-Level and Satellite Images to Estimate Built Environment Effects on Cardiovascular Health, NIH, 2020-2024, Co-PI, Total budget (and share to VT): $3,500,000 ($571,944).

Research objective: Develop deep learning and machine learning algorithms to classify satellite images to obtain longitudinal neighborhood-level built environment variables to understand their effects on cardiovascular health.

Modeling Energy Emissions of Autonomous Electric Vehicles, Jeffress Foundation, 2019-2020, Co-PI, Total budget (and share to VT): $120,000 ($51,675).

Research objective: Develop and implement a decision-support model to enable proactive planning for transportation energy consumption reduction with autonomous electric vehicles.

The Social and Policy Impacts of Autonomous Electric Mobility: A Coupled Model for Transportation and Land Use Models, 4-VA Collaborative Research Grant, Virginia Tech, 2019-2020, Principle Investigator, Total budget (and share to VT): $25,000 ($15,502).

Research objective: Develop a conceptual framework for an integrated travel demand and land use models that can be used to evaluate the long-term social and policy impacts of autonomous electric vehicles.

Measuring the Impact of Alcohol-Related Crime Reduction Strategies for Restaurants and Nightlife in Arlington, Center for Peace Studies and Violence Prevention, Virginia Tech, 2018-2019, Principle Investigator, Total budget: $7,000.

Research objective: Examine the social and economic impacts of Arlington Restaurant Initiative (ARI) by integrating research, course teaching, and public engagement.

Data Science to Develop Urban Form Metrics using Machine Learning and Longitudinal Landsat Imagery, Microsoft Azure Data Science Research Award, 2018-2019, Principle Investigator, Total budget (and share to VT): $20,000.

Research objective: Using data science techniques and Azure cloud service to develop scalable and generalizable models to classify urban form patterns using longitudinal satellite images.

Early Career Research Network Development, Virginia Tech Mentor Program, 2017, Principle Investigator, Total budget: $1,500.

PUBLICATIONS

Refereed Journal Articles

An "*" represents a student under my supervision; a "†" indicates corresponding author.

Submitted Wang, K.*, W. Zhang†, The Role of Urban Forms on the Performance of Shared Automated Vehicles (SAVs). (Under Review)

W. Zhang†, Buehler, R., Boarddus, A., Sweeny, T. What type of infrastructures do e-scooter riders prefer? A revealed preference GPS data-based route choice model (Under Review)

Buehler, R., Boarddus, A., W. Zhang, White, E., Mollenhauer, M. Changes in Travel Behavior, Attitudes, and Preferences among E-Scooter Riders and Non-Riders: Results from Pre and Post E-Scooter System Launch Surveys at Virginia Tech (Under Review)

Jia, W., Chen T.D., W. Zhang, Lim, L., Wang, K., Mirla, A. Willingness-to-Relocate: Analyzing TravelersâĂŹ Parking Preferences for Private Autonomous Vehicles (Under Review)

2020 W. Zhang†, Wang, K., Wang, S., Jiang, Z., Mondschein, A., Noland, R. Synthesizing Neighborhood Preferences for Automated Vehicles, Transportation Research Part C: Emerging Technologies (Accepted) [IF 6.1]

M. Demuzere, S. Hankey, G. Mills, W. Zhang, T. Lu, and B. Bechtell. Combining expert and crowd-sourced training data to map urban form and functions for the continental us. *Scientific Data*, 2020 [IF 5.5]

K. Gupta, W. Zhang, and R. P. Hall. Risk priorities and their co-occurrences in smart city project implementation: Evidence from india's smart cities mission. *Environment and Planning B: Urban Analytics and City Science*, page 2399808320907607, 2020 [IF 1.5]

W. Zhang† and K. Wang. Parking futures: Shared automated vehicles and parking demand reduction trajectories in atlanta. *Land Use Policy*, 91:103963, 2020 [IF 3.2]

2019 T. Lu, J. Lansing, W. Zhang, M. J. Bechle, and S. Hankey. Land use regression models for 60 volatile organic compounds: Comparing google point of interest (poi) and city permit data. *Science of The Total Environment*, 677:131–141, 2019. [IF 4.9]

C. Feng and W. Zhang. Algorithms for the parametric analysis of metric, directional, and intersection reach. *Environment and Planning B: Urban Analytics and City Science*, 2019. [IF 1.5]

2018 W. Zhang†, F. Wang, C. Barchers, and Y. Lee. The impact of transit-oriented development on housing value resilience: Evidence from the city of atlanta. *Journal of Planning Education and Research*, page 0739456X18787011, 2018. [IF 1.4].

W. Zhang†, S. Guhathakurta, and E. Khalil. Impact of private autonomous vehicles on vehicle ownership and unoccupied VMT generation. *Transportation Research Part C: Emerging Technologies*, 90:156–165, 2018. [IF:4.5]

W. Zhang and S. Guhathakurta. Residential location choices for workers in the era of shared autonomous vehicles. *Journal of Planning Education and Research*, 2018. [IF:1.4]

W. Zhang†, C. Robinson, S. Guhathakurta, V. M. Garikapati, B. Dilkina, M. A. Brown, and R. M. Pendyala. Estimating residential energy consumption in metropolitan areas: A microsimulation approach. *Energy*, 155:162–173, 2018. [IF:3.8]

2017 W. Zhang, S. Guhathakurta, R. Pendyala, V. Garikapati, and C. Ross. A generalizable method for estimating household energy by neighborhoods in U.S. urban regions. *Energy Procedia*, 143:859–864, 2017.

C. Robinson, B. Dilkina, J. Hubbs, W. Zhang, S. Guhathakurta, M. A. Brown, and R. M. Pendyala. Machine learning approaches for estimating commercial building energy consumption. *Applied Energy*, 208:889–904, 2017. [IF:7.2]

V. M. Garikapati, D. You, W. Zhang, R. M. Pendyala, S. Guhathakurta, M. A. Brown, and B. Dilkina. Estimating household travel energy consumption in conjunction with a travel demand forecasting model. *Transportation Research Record: Journal of the Transportation Research Board*, (2668):1–10, 2017. [IF:0.5]

W. Zhang and S. Guhathakurta. Parking spaces in the age of shared autonomous vehicles: How much parking will we need and where? *Transportation Research Record: Journal of the Transportation Research Board*, (2651):80–91, 2017. [IF:0.5]

G. Zhang, W. Zhang, S. Guhathakurta, and N. Botchwey. Development of a community planning support system based on open data: Flow-based planning tool in the City of Atlanta. *Environment and Planning B: Urban Analytics and City Science*, page 2399808317705881, 2017. [IF:1.5]

2016 W. Zhang, S. Guhathakurta, and C. Ross. Trends in automobile energy use and GHG emissions in suburban and inner city neighborhoods: lessons from metropolitan phoenix, USA. *Energy Procedia*, 88:82–87, 2016.

2015 W. Zhang, S. Guhathakurta, J. Fang, and G. Zhang. Exploring the impact of shared autonomous vehicles on urban parking demand: An agent-based simulation approach. *Sustainable Cities and Society*, 19:34–45, 2015. [IF:1.8]

Book Chapters

2017 S. P. French, C. Barchers, and W. Zhang. How should urban planners be trained to handle big data? In *Seeing Cities Through Big Data*, pages 209–217. Springer, 2017.

Peer Reviewed Conference Proceedings

2020 Saha, P., Robinson, E., W. Zhang, Hankey, S., Robinson, A. and Presto, A. *Spatial Patterns and Spatial Modeling of Primary Organic Aerosol Concentrations in Three North American Cities*, EGU General Assembly, 4-8 May 2020, https://doi.org/10.5194/egusphere-egu2020-19547

Wang, K., W. Zhang, Mortveit, H., Samarth, S., *Improved Travel Demand Modeling with Synthetic Populations.* International Workshop on Multi-Agent Based Simulation (MABS 2020).

W. Zhang, Wang, K., Wang, S., Jiang, Z., Mondschein A., Noland, R., *Machine Learning based Microsimulation Approach for the Spatial Distributions of Automated Vehicle Preferences.* International Symposium on Transportation Data and Modelling (ISTDM) June 24 - 26, 2020, Ann Arbor, Michigan.

2019 Wang, K., Xie, W., W. Zhang, Private Automated Vehicles Parking Space Optimization: A Public Sector Perspective. Proceeding of Transportation Research Board Annual Meeting.

2018 W. Zhang, Mortveit, H., Samarth, S., *Estimating Shared Autonomous Vehicle Fleet Size to Meet Urban Daily Travel Demand.* ABMUS 2018 : The 3rd International Workshop on Agent-Based Modelling of Urban Systems.

W. Zhang, Guhathakurta, S., Khalil, E., *The Impact of Private Autonomous Vehicles on Vehicle Ownership and Unoccupied VMT Generation.* Proceeding of Transportation Research Board Annual Meeting.

2017 Grikapati, V. M., You, D., W. Zhang, Pendyala, R. M., Guhathakurta, S., Brown, M. A., Dilkina, B. *Estimating household travel energy consumption in conjunction with a travel demand forecasting model.* Proceeding of Transportation Research Board Annual Meeting.

W. Zhang, Wang, F., Barchers, C., Lee, Y., *The impact of TOD on housing value resilience: evidence from the City of Atlanta.* Proceeding of Transportation Research Board Annual Meeting.

2016 Madaio, M., Chen, S., Haimson, O. L., W. Zhang, Cheng, X., Hinds-Aldrich, M., Chau, D., Dilkina, B., *Firebird: Predicting Fire Risk and Prioritizing Fire Inspections in Atlanta*, Proceedings of ACM SIGKDD on Knowledge Discovery and Data Mining Conference (12% acceptance rate).

2015 Zhang, G., W. Zhang, Guhathakurta, S., *Development and Application of Guideline for open source data based community planning support system development: Neighborhood quality of life and health in City of Atlanta*, Proceeding of Computers in Urban Planning and Urban Management Conference.

French, S., Barchers, C., W. Zhang, *Moving beyond Operations: Leveraging Big Data for Urban Planning Decisions*, Proceeding of Computers in Urban Planning and Urban Management Conference.

W. Zhang, Guhathakurta, S., Fang, J., Zhang, G., *The Performance and Benefits of a Shared Autonomous Vehicles Based Dynamic Ridesharing System: An Agent-Based Simulation Approach.* Proceeding of Transportation Research Board Meeting.

2014 W. Zhang, Carragher, M., Jacobs, A. *Spider Maps: Summary of Best Practices and Guide to Design*, Proceeding of Transportation Research Board Annual Meeting.

2013 W. Zhang, Guhathakurta, S., Xu, Y., *The Effects of Compact Development on Travel Behavior, Energy Consumption and GHG Emissions: Lessons from Neighborhoods in Phoenix Metropolitan Area*, Joint Association of European Schools of Planning/Association of Collegiate Schools of Planning Congress.

2013 French, S., W. Zhang, *The Role of Modeling and Simulation in Creating Resilient Cities*, Joint Association of European Schools of Planning/Association of Collegiate Schools of Planning Congress.

AWARDS, HONORS, AND FELLOWSHIPS

2017 Knowledge Discovery and Data Mining (KDD) Conference Best Student Paper Award Runner Up (Applied Data Science Track)

2016 Georgia Planning Association (GPA) Annual Outstanding Student

2013 Best Research Poster in GIS Day Mapping Competition

2011 Second Prize in Chinese Undergraduate Mathematical Modeling Competition
Zhejiang University First Grade Scholarship ($1,000)
2010 China Nandu Innovation Scholarship($1,200)
2009 Zhejiang University First Grade Scholarship ($1,000)
2008 China Nandu Innovation Scholarship($1,200)
2007 China's National Scholarship ($1,500 from China's Department of Education)
Zhejiang University First Grade Scholarship ($1,000)

INVITED TALKS

2015 *Predicting Fire Risk in Atlanta* at Atlanta Fire and Rescue Department. Invitation received from Chief Baker to present to Atlanta Chief Operating Officer Mike Geisler, Commissioner of the Department of Planning and Community Development, Tim Keane.

2013 *The Implementation of GIS Technology in Urban Transportation Planning* at School of Urban Planning and Design (SUPD). Peking University, Shenzhen Campus.

Using GIS model builder and Google API to Empower Transit Paper Maps Generation at Metropolitan Atlanta Rapid Transit Authority, Atlanta, GA.

CONFERENCE PARTICIPATION

Papers Presented

2018 *Oral presentation* W. Zhang, *Displacement Pressure: Who Wins and Who Loses in the Era of Automated Electric Vehicles.* Association of Collegiate Schools of Planning (ACSP) 58^{th} Annual Conference, October, Buffalo, NY.

Oral presentation W. Zhang, S. Guhathakurta, E. Kahlil, *Impact of Private Autonomous Vehicles on Vehicle Ownership and Unoccupied VMT Generation.* Transportation Research Board Annual Meeting, January, Washington D.C.

2017 *Oral presentation* W. Zhang, Guhathakurta, S. *Employment Agglomeration in the Era of Automated Vehicles* Association of Collegiate Schools of Planning (ACSP) 57^{th} Annual Conference, November, Denver, CO.

Oral presentation W. Zhang, Guhathakurta, S. *Parking spaces in the age of shared autonomous vehicles: How much parking will we need and where?* Transportation Research Board Annual Meeting, January, Washington D.C.

Oral & Poster presentation Grikapati, V. M., You, D., W. Zhang, Pendyala, R. M., Guhathakurta, S., Brown, M. A., Dilkina, B. *Estimating household travel energy consumption in conjunction with a travel demand forecasting model.* Annual Transportation Research Board Meeting, January, Washington D.C.

2016 *Oral presentation* French, S., Barchers, C., W. Zhang *Moving beyond Operations: Using Urban Big Data for Long Range Planning.* Association of Collegiate Schools of Planning 56^{th} Annual Conference, November, Portland, OR.

Oral presentation W. Zhang, S. Guhathakurta. *Residential location choices for workers in the era of shared autonomous vehicles* Association of Collegiate Schools of Planning 56^{th} Annual Conference, November, Portland, OR.

Oral presentation Madaio, M., Chen, S., Haimson, O. L., W. Zhang, Cheng, X., Hinds-Aldrich, M., Chau, D., Dilkina, B., *Firebird: Predicting Fire Risk and Prioritizing Fire Inspections in Atlanta*, ACM SIGKDD on Knowledge Discovery and Data Mining Conference, July, San Francisco, CA.

2015 *Oral presentation* Madaio, M., Haimson, O.L., W. Zhang, Cheng, X., Hinds-Aldrich, M., Dilkina, B., Chau, D., *Identifying and Prioritizing Fire Inspections: A Case Study of Predicting Fire Risk in Atlanta.* Bloomberg Data for Good Exchange, September, New York.

Oral presentation French, S., Barchers, C., W. Zhang, *Moving beyond Operations: Leveraging Big Data for Urban Planning Decisions*, The 14^{th} International Conference of Computers in Urban Planning and Urban Management Conference (CUPUM), July, Boston.

Oral presentation W. Zhang, S. Guhathakurta, G. Zhang, J. Fang, *Explore the impact of Shared Autonomous Vehicles on Urban Parking Demand: An Agent-based Approach*, The 14^{th} International Conference of Computers in Urban Planning and Urban Management Conference (CUPUM), July, Boston.

Oral presentation Zhang, G., Guhathakurta, S., W. Zhang, *Hierarchical Controls on Watershed and Stormwater: Land Use/Cover Composition and Connectivity*, The 14^{th} International Conference of Computers in Urban Planning and Urban Management Conference (CUPUM), July, Boston.

Oral presentation Zhang, G., W. Zhang, Guhathakurta, S., *Development and Application of Guideline for open source data based community planning support system development: Neighborhood quality of life and health in City of Atlanta*, The 14^{th} International Conference of Computers in Urban Planning and Urban Management Conference (CUPUM), July, Boston.

Poster presentation W. Zhang, Guhathakurta, S., Fang, J., Zhang, G., *The Performance and Benefits of a Shared Autonomous Vehicles Based Dynamic Ridesharing System: An Agent-Based Simulation Approach.* Transportation Research Board Annual Meeting, January, Washington D.C.

2014 *Oral presentation* W. Zhang, Guhathakurta, S., Fang, J., Zhang, G., *Exploring the Impact of Shared Autonomous Vehicles on Urban Parking Demand.* Association of Collegiate Schools of Planning (ACSP) 54^{th} Annual Conference, October, Philadelphia, PA.

Oral presentation French, S., Barchers, C., W. Zhang, How Should Urban Planners Be Trained to Handle Big Data? NSF Workshop on Big Data and Urban Informatics. August, Chicago, IL.

Poster presentation W. Zhang, Carragher, M., *Spider Maps: Summary of Best Practices and Guide to Design*, Transportation Research Board Annual Meeting, January, Washington D.C.

2013 *Oral presentation* W. Zhang, Guhathakurta, S., Xu, Y. *The Impact of Compact Development on Travel Behavior, Energy Consumption and GHG Emissions: Lessons Learned from Phoenix Metropolitan Area.* NARSC/RSAI Conference, November, Atlanta, GA.

Oral presentation W. Zhang, Carragher, M., *A GIS Based Spider Map Generation Tool for Transit Agencies*, GIS in Transit, October, Washington D.C.

2012 *Oral presentation* French, S., W. Zhang, *From Component to Metro Region: Modeling the Benefits of Nonstructural Seismic Improvement.* NEES Nonstructural Project Meeting. October, Reno, NV.

Discussant & Roundtable Speaker

2018 Speaker for Roundtable Session: Transport Environmental Impacts, North American Regional Science Council/Regional Science Association International Conference, November, Atlanta, GA.

2013 Formal Paper Session Transportation IX: Transport Environmental Impacts, North American Regional Science Council/Regional Science Association International Conference, November, Atlanta, GA.

Moderator

2014 Safety and Technology Session, Association of College Schools of Planning (ACSP) 54^{th} Annual Conference, November, Philadelphia, PA.

TEACHING EXPERIENCE

Graduate Courses: Introduction to GIS, Computer Application in Planning: Planning Analytics, Planning Studio (year-long)

Undergraduate Courses: Urban and Regional Planning Analysis

ADVISING & MENTORING

Master's Student Advisees

Qiu Zihao	Committee Member, Urban and Regional Planning, Status: in-progress Major Paper: Analyzing Citi Bike Use Demand Using Trip Data to Optimize the Supply of Bike Facilities
Kelly Fomenko	Chair, Urban and Regional Planning, Status: Completed Major Paper: Curbing Cul-de-sac Development and Promoting Smart Growth: A Case Study of Albany County, New York
Sam Spencer	Committee Member, Urban and Regional Planning, Status: Completed Thesis: The Fiscal Resilience of American Cities

Doctoral Student Advisees

Kaidi Wang	Chair, Planning Governance, and Globalization, Status: in-progress Topic: Automated Vehicles and Urban Land Use
Tianjun Lu	Committee Member, Planning Governance, and Globalization, Status: Graduated Topic: Urban Form and Air Quality

Khushboo Gupta	Committee Member, Planning Governance, and Globalization, Status: Graduated Topic: Smart Cities in Developing Countries
Brian Mayer	Committee Member, Industrial System Engineering, Status: in-progress Topic: Transit Service Optimization

UNIVERSITY SERVICES

2018-2020	Virginia Tech UAP Graduate and undergraduate internship Coordinator Member of Research Committee for Virginia Tech Data & Decision Destination Area Member of Symposium Committee for Virginia Tech Data & Decision Destination Area
2017-2018	Virginia Tech Project Member of 2019 Choice and Challenges - Autonomous Vehicles in New River Valley Symposium

SERVICE TO PROFESSION

Ad hoc reviewer for various Journals, including Sustainable Cities and Society, J. of Transport Policy, J. Transport Review, IEEE Intelligent Transportation Systems Magazine, J. of Planning Education and Research, J. of Cleaner Production, J. of Traffic and Transportation Engineering, Advances in Civil Engineering, Transportation Research Record.

Grant reviewer for Irish Research Council Laureate Awards scheme 2017/18

MEDIA COVERAGE

2016	*Embracing Analytics: How communities around the country are utilizing data analytics to predict a host of risk factors and reduce fires*, Jesse Roman, May 2, National Fire Protection Association (NFPA).
2015	*When Computing Equals Social Good*, Georgia Tech College of Computing

RELATED PROFESSIONAL SKILLS

Urban Modeling	GIS, TransCAD, CUBE, UrbanSim
Statistics	R, SPSS, STATA, NLOGIT, Matlab, Mathematica
Computer Languages	Python, JavaScipt, CSS, HTML
Databases	SQLite, Microsoft Access
Design	Tableau, Carto, Photoshop, Rhino, 3D Max, AutoCAD