Curriculum Vitae

Mehmet Baran Ulak

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Personal Information

Current Occupation: Postdoctoral Associate at SUNY/Stony Brook University

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Date of birth: August 30, 1986

Education

2014 - 2018   **Doctor of Philosophy**, FLORIDA STATE UNIVERSITY. Major: Civil and Environmental Engineering. Supervisor: Eren Erman Ozguven. (Graduation date: December 2018)

Dissertation: *Geographical Information Systems-Based Spatial and Statistical Investigation to Enhance Transportation Safety for the Aging Population*

2009 - 2011   **Master of Science**, POLITECNICO DI MILANO. Major: Civil Engineering for Risk Mitigation. Minor 1: Transport Management in Emergency Planning. Minor 2: Structure Retrofitting for Seismic and Exceptional Loads. Supervisor: Roberto Felicetti.

Thesis: *On the Influence of Pore Pressure, on the Apparent Tensile Strength of Concrete*

2004 - 2009   **Bachelor of Science**, ORTA DOĞU TEKNİK ÜNİVERSİTESİ. Major: Civil Engineering. Minor: Structures. Supervisor: Erhan Karaesmen.

Thesis: *Design of Post-Tensioned Concrete Bridge on Yesilirmak River*

Professional Experience

2019–	Postdoctoral Associate, Civil Engineering, SUNY/Stony Brook University.
2018–2019	Researcher, Civil and Environmental Engineering, Florida State University.
2014–2018	Graduate Research Assistant, Civil and Environmental Engineering, Florida State University.

<u>Laboratories and Centers:</u>
- ❖ Collaborative Intelligent Infrastructure Lab (CI2)
- ❖ Center for Accessibility and Safety for an Aging Population Center

2014–2018	Guest Lecturer, Civil and Environmental Engineering, Florida State University.
20013–2014	Project Development and Tendering Engineer, Dia Holding FZCO, Turkey.
20012–2013	Project Management and Coordination Engineer, SWS Engineering, Turkey.

Research Interest

My research interests are diverse and they span from transportation mobility, accessibility, and safety to assessment of urban and rural resilience, spatial analysis, and smart and connected systems. Of the various subjects, I am interested in broad interdisciplinary areas including the statistical and spatial analysis of urban and rural problems, geospatial analysis, big data applications and data mining, geographical aspects of mobility and accessibility, and demographic and socioeconomic assessment of daily transportation incidents and natural hazards, intelligent transportation systems, and smart city concepts. I have also focused on the emergency disaster resilience for hurricanes. I have a particular curiosity about often disregarded importance and role of demographics and socioeconomics, or human element in general, in tackling urban issues.

Participated Projects

- One Bridge at a Time: Bridging the Digital Divide for the Well-Being of Aging Populations in Smart and Connected Communities (National Science Foundation)
- UHDNETCity: User-centered Heterogeneous Data Fusion for Multi-networked City Mobility (National Science Foundation)
- MetroPlan Orlando SunRail Transit-Oriented Development Ridership Study (MetroPlan Orlando)
- Development of Safety Performance Functions for Restricted Crossing U-turn (RCUT) Intersections (Florida Department of Transportation)
- Multiple projects for Center for Accessibility and Safety for an Aging Population (U.S. Department of Transportation)
  - ❖ Needs Assessment for Multi-modal Emergency Transportation Operations with a Focus on an Aging Population
  - ❖ Travel Time and Roadway Capacity Reliability for an Aging Population: The Development of a Model Integrating Roadway Traffic with Aging Adults' Driving Behavior
  - ❖ Senior Community Resilience: Assessing the Interdependencies between Critical Transportation Infrastructures and Implications on Aging People's Households

Honors, Scholarships, and Fellowships

- ❖ Center for Accessibility and Safety for an Aging Population Center Doctoral Fellowship (2015).
- ❖ Politecnico di Milano M.Sc. Scholarship (2009-2011).
- ❖ Middle East Technical University Honor Roll Graduate (2009).

Teaching

The lectures I am involved in teaching foster an interdisciplinary approach to problem solving through integrating diverse factors such as demographic and socioeconomic variables, land use characteristics, or human behavior into urban and transportation related issues such as resilience, mobility, accessibility, and safety. Furthermore, I value the importance of hands-on applications using ArcMap, Matlab, and R for courses associated with urban computing, transportation planning and statistics, and machine learning applications. I have been responsible for assisting graduate and undergraduate courses related to transportation systems and statistical applications. Moreover, I have taken "Scientist Teaching Science" course to improve my knowledge on and learn strategies for successful teaching.

Guest Lecturer for:
- ❖ Statistical Applications for Engineers (EGN5458)
- ❖ Transportation Economics (TTE5501)
- ❖ Transportation Engineering (TTE3004)
- ❖ Transportation Systems Analysis (TTE5305)

Supervision of Undergraduate Student Research

Byrd, M. (Sep 2016–Mar 2017).
Research administered through Undergraduate Research Opportunity Program of FSU.

Community Service

- ❖ Research Mentor, Young Scholars Program, Young Scholars Program through Florida State University (2015 - 2018). *Providing transportation education and teaching a Geographical Information Systems (GIS) software to two high school students.*

Language Proficiency

English   fluent in speaking, reading, and writing.
Turkish   native in speaking, reading, and writing.
Italian   beginner in speaking, reading, and writing.

Skills

Softwares: ArcGIS, Matlab, R, JAGS, OpenBugs, Vissim, Flexsim, familiar with C++, Python
General use of Microsoft Office Applications

Selected Coursework

Transportation System Analysis; High Dimensional Statistics; Applied Optimization; Limited

Dependent Variable Models; Computational Methods in Statistics; Advanced Traffic Flow Analysis; Applied Simulation Modeling; Foundations of Emergency Management.

References

Eren Erman Ozguven, Ph.D.
Institution: Florida State University
E-mail: eozguven@fsu.edu
Phone: +1-908-239-0116
Website: http://www.eng.fsu.edu/~eozguven/Projects.html

Anil Yazici, Ph.D.
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E-mail: Anil.Yazici@stonybrook.edu
Phone: +1-631-632-9349
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Mark Horner, Ph.D.
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Lisa Spainhour, Ph.D.
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Website: http://www.eng.fsu.edu/~moses/

Publications

Refereed Journal Articles

18. Ulak, M. B., Ozguven, E. E., Vanli, A., Horner, M. (2019). Exploring Alternative Spatial Weights to Detect Crash Hotspots. *Computers, Environment and Urban Systems*, 78, 1-9. DOI: 10.1016/j.compenvurbsys.2019.101398

17. Ulak, M. B., Ozguven, E. E., Vanli, A., Dulebenets, M., & Spainhour, L. (2018). Multivariate Random Parameter Tobit Modeling of Crashes Involving Aging Drivers, Passengers, Bicyclists, and Pedestrians: Spatiotemporal Variations. *Accident Analysis and Prevention*, 121, 1-13. DOI: 10.1016/j.aap.2018.08.031

16. Ulak, M. B., Ozguven, E. E., Spainhour, L., & Vanli, A. (2017). Spatial Investigation of Aging-Involved Crashes: A GIS-Based Case Study in Northwest Florida. *Journal of Transport Geography*, 58, 71-91. DOI: 10.1016/j.jtrangeo.201

15. Ulak, M. B., Kocatepe, A., Konila Sriram, L. M., Ozguven, E. E., & Arghandeh, R. (2018). Assessment of the Hurricane-Induced Power Outages from a Demographic, Socioeconomic and Transportation Perspective. *Natural Hazards*, 92(3), 1489–1508. DOI: 10.1007/s11069-018-3260-9

14. Ulak, M. B., Ozguven, E. E., Karabag, H. H., Ghorbanzadeh, M., Moses, R., Dulebenets, M. (In Press). Development of Safety Performance Functions for Restricted Crossing U-Turn (RCUT) Intersections. *Journal of Transportation Engineering, Part A: Systems*, 35 pages. DOI: 10.1061/JTEPBS.0000346

13. Ulak, M. B., Kocatepe, A., Ozguven, E. E., Horner, M. W. (2019). How far from home do crashes occur? A network based analysis. *Safety Science*, 118, 298-308. DOI: 10.1016/j.ssci.2019.05.028

12. Ulak, M. B., Kocatepe, A., Ozguven, E. E., Horner, M., & Spainhour, L. (2017). Geographic Information System–Based Spatial and Statistical Analysis of Severe Crash Hotspot Accessibility to Hospitals. *Transportation Research Record: Journal of the Transportation Research Board*, *2635*, 90-97. DOI: 10.3141/2635-11

11. Kocatepe, A., Ulak, M. B., Lores, J., Ozguven, E. E., & Yazici, A. (2018). Exploring the Reach of Departments of Transportation Tweets: What Drives Public Engagement? *Case Studies on Transport Policy*, 6(4), 683–694. DOI: 10.1016/j.cstp.2018.08.007

10. Lalitha Madhavi, K. S., Ulak, M. B., Ozguven, E. E., Arghandeh, R. (2019). Multi-Network Vulnerability Causal Model for Infrastructure Co-Resilience. *IEEE Access,* 7(1). DOI: 10.1109/ACCESS.2019.2904457

9. Kocatepe, A., Ulak, M. B., Ozguven, E. E., Horner, M., & Arghandeh, R. (2017). Socioeconomic Characteristics and Crash Injury Exposure: A Case Study in Florida Using Two-Step Floating Catchment Area Method. *Applied Geography*, 87, 207-221. DOI: 10.1016/j.apgeog.2017.08.005

8 Kocatepe, A., Ulak, M. B., Kakareko, G., Ozguven, E. E., Jung, S., & Arghandeh, R. (2018). Measuring the Accessibility of Critical Facilities in the Presence of Hurricane-related Roadway

Closures and An Approach for Predicting Future Roadway Disruptions. *Natural Hazards*, 1-21. DOI: 10.1007/s11069-018-3507-5

7. Ulak, M. B., Ozguven, E. E., & Spainhour, L. (2017). Age-Based Stratification of Drivers to Evaluate the Effects of Age on Crash Involvement. *Transportation Research Procedia*, *22*, 551-560. DOI: 10.1016/j.trpro.2017.03.044

6. Kocatepe, A., Ulak, M. B., Ozguven, E. E., & Horner, M. (2019). Who might be affected by crashes? Identifying areas susceptible to crash injury risk and their major contributing factors. *Transportmetrica A: Transport Science, 15(2),* 1278-1305. DOI: 10.1080/23249935.2019.1581854

5. Vemulapalli, S. S., Ulak M. B., Ozguven E. E., Sando T., Horner M. W., Abdelrazig Y., and Moses R. (2017). GIS-based Spatial and Temporal Analysis of Aging-Involved Accidents: a Case Study of Three Counties in Florida. *Applied Spatial Analysis and Policy*, 10(4), 537-563. DOI: 10.1007/s12061-016-9192-4

4. Alisan, O., Ghorbanzadeh, M., Ulak, M. B., Kocatepe, A., Ozguven, E. E., Horner, M., Huang, W. (2020). Extending interdiction and median models to identify critical hurricane shelters. *International Journal of Disaster Risk Reduction*, 43, 1-17. DOI: 10.1016/j.ijdrr.2019.101380.

3. Dulebenets, M., Ozguven, E. E., Moses, R., & Ulak, M. B. (2017). Intermodal Freight Network Design for Transport of Perishable Products. *Open Journal of Optimization*, 5(4), 120-139. DOI: 10.4236/ojop.2016.54013

2. Mafi, S., AbdelRazig, Y., Amirinia, G., Kocatepe, A., Ulak, M. B., Ozguven, E. E. (2019). Investigating Exposure of the Population to Crash Injury Using a Spatiotemporal Analysis: A Case Study in Florida. *Applied Geography*, 104, 42-55. DOI: 10.1016/j.apgeog.2019.02.001

1. Ulak, M. B., Ozguven, E. E., Moses, R., Sando, T., Boot, W., Abdelrazig, Y., & Sobanjo, J. (2019). Driver Age-Focused Assessment of Traffic Performance Measures and Safety: A Microsimulation Based Analysis for an Unsignalized T-intersection. *Journal of Traffic and Transportation Engineering*, 1-15. DOI: 10.1016/j.jtte.2018.05.004

Under Review

Ulak, M. B., Lalitha Madhavi, K. S., Kocatepe, A., Ozguven, E. E., Arghandeh, R. (under review). Resilience Characterization for Multi-Layer Infrastructure Networks. *IEEE Transactions on Intelligent Transportation Systems*. Manuscript submitted for publication, 11 pages.

Ulak, M. B., Kocatepe, A., Ozguven, E. E., Kumar, A., Yazici, A. (under review). A Stop Safety Index to Address Pedestrian Safety around Bus Stops. *Computers, Environment and Urban Systems*. Manuscript submitted for publication, 22 pages.

Lalitha Madhavi, K. S., Ulak, M. B., Arghandeh, R., Pamidi, S., Ozguven, E. E. (under review). Sociotechnical Infrastructure Resilience using Causal Inference. *International Journal of Disaster Risk Reduction*. Manuscript submitted for publication, 22 pages.

Ulak, M. B., Yazici, A., Aljarrah, M. (under review). Value Associated with Convenience for Taxi Trips in New York City. Transportation Research Part A, 16 pages.

Refereed Proceedings

Ulak, M. B., Kocatepe, A., Ozguven, E. E., and Kumar, A. (2019). Are There More Pedestrian-Involved Crashes Around Bus Stops? Development of a Safety Index. In *Transportation Research Board's 97th Annual Meeting*, (pp. 19). Transportation Research Board.

Ulak, M. B., Ozguven, E. E., Horner, M. W., Weaver, L., Puente, J., Crute, J., Smith, D. J., Duncan, M., and Whitton, E. (2019). Demographic and Socioeconomic Analysis of Potential Sunrail Transit System Riders in Orlando, Florida. In *Transportation Research Board's 97th Annual Meeting*, (pp. 23). Transportation Research Board.

Ulak, M. B., Ozguven, E. E., Vanli, O., Dulebenets, M., & Spainhour, L. (2018). Multimodal Investigation of Crashes Involving Aging Drivers, Passengers, Bicyclists and Pedestrians. In *Transportation Research Board's 97th Annual Meeting* (pp. 22). Transportation Research Board.

Kocatepe, A., Ulak, M. B., Lalitha Madhavi, K. S., Pinzan, D., Ozguven, E. E., and Arghandeh, R. (2018). Co-resilience Assessment of Hurricane-induced Power Grid and Roadway Network Disruptions: A Case Study in Florida with a Focus on Critical Facilities. In 21st International Conference on Intelligent Transportation Systems (ITSC). IEEE.

Lalitha Madhavi, K. S., Cordova, J., Ulak, M. B., Ohlsen, M., Ozguven, E. E., Arghandeh, R., & Kocatepe, A. (2017). Advanced Electricity Load Forecasting Combining Electricity and Transportation Network. In Kenan Hatipoglu, Jignesh Solanki, Sarika Khushalani Solanki (Ed.), *49th North American Power Symposium (NAPS)* (pp. 6). IEEE.

Pinzan, D., Kocatepe, A., Gilanifar, M., Ulak, M., Ozguven, E. E., & Arghandeh, R. (2018). Data-driven and Hurricane-focused Metrics for Combined Transportation and Power Networks Resilience. In *Transportation Research Board's 97th Annual Meeting* (pp. 20). Transportation Research Board. Retrieved from https://trid.trb.org/view/1496917

Kocatepe, A., Ulak, M., Kakareko, G., Pinzan, D., Cordova, J., Ozguven, E. E., Jung, S., Arghandeh, R., & Sobanjo, J. (2018). Assessment of Emergency Facility Accessibility in the Presence of Hurricane-related Roadway Closures and Prediction of Future Roadway Disruptions. In *Transportation Research Board's 97th Annual Meeting* (pp. 23). Transportation Research Board.

Ulak, M. B., Kocatepe, A., Ozguven, E. E., Horner, M., & Spainhour, L. (2017). A GIS-based Spatial and Statistical Analysis of Severe Crash Hotspot Accessibility to Hospitals. In *Transportation Research Board's 96th Annual Meeting*. Transportation Research Board.

Ulak, M. B., Ozguven, E. E., Moses, R., Sando, T., Boot, W., Abdelrazig, Y., & Sobanjo, J. (2017). Aging Driver-Focused Assessment of Traffic Performance Measures and Safety with a Micro-

simulation Based Analysis in Florida. In *Transportation Research Board's 96th Annual Meeting*. Transportation Research Board.

Ulak, M. B., Ozguven, E. E., & Kocatepe, A. (2016). GIS-based Investigation of Aging Involved Crashes: A Case Study in Northwest Florida. In *Road Safety & Simulation International Conference 2015*, Southeastern Transportation Center, Orlando, Florida.

Kocatepe, A., Ulak, M. B., Ozguven, E. E., Horner, M., & Arghandeh, R. (2017). Socioeconomic Characteristics and Crash Proneness: A Case Study in Florida Using Two-step Floating Catchment Area Method. In *Transportation Research Board's 96th Annual Meeting*. Transportation Research Board.

Refereed Papers at Conferences

Kocatepe, A., Ulak, M. B., Lores, J., Ozguven, E. E., & Yazici, M. A. (presented 2017, July). Assessing the Factors that Affect the Public Engagement with Department of Transportation Twitter Accounts. Presented at *The International Symposium on Location-Based Social Media Data and Tracking Data*, ICA Commission on Geospatial Analysis and Modeling & ICA Commission on Location-based Services, Washington D.C., USA. (International)

Nonrefereed Papers at Conferences

Deng, O., Mullings, A., Kovankaya, Y., Byrd, M., Ulak, M., Kocatepe, A., & Ozguven, E. E. (presented 2017, January). Geographic Information System-Based Impact Analysis of Hurricane Hermine: Case Study in Tallahassee, Florida. Presented at *Transportation Research Board's 97th Annual Meeting*. Transportation Research Board, Washington, D.C. (International)

Bommineni, V., Zhou, V., Ponnaluri, S., Ulak, M. B., Kocatepe, A., & Ozguven, E. E. (presented 2017, January). A GIS-based Comparative Livability Analysis between Florida Counties with a Focus on 65+ Cohort. Presented at *Transportation Research Board's 96th Annual Meeting*. Transportation Research Board, Washington, D.C. (International)

Dyer, B., Callegari, N., Ulak, M. B., Ozel, H., & Ozguven, E. E. (presented 2016, January). Evaluating Transportation Accessibility to Healthcare among Cancer Populations in Florida. Presented at *Transportation Research Board's 95th Annual Meeting*. Transportation Research Board, Washington, D.C., USA. (International)

Refereed Presentations at Conferences

Ulak, M. B., Ozguven, E. E., & Spainhour, L. (presented 2016, September). Age-based stratification of drivers to evaluate the effects of age on crash involvement. Presented at *2016 European Working Group on Transportation (EWGT) Conference*. Istanbul, Turkey. (International)

Ulak, M. B., Ozguven, E. E., & Kocatepe, A. (presented 2015, October). GIS-based Identification and Evaluation of Significant Factors for Aging-Involved Crashes. Poster presentation at *2015 Road Safety & Simulation International Conference*. Southeastern Transportation Center, Orlando, Florida. (International)

Nonrefereed Presentations at Conferences

Ulak, M. B., Ozguven, E. E., & Kocatepe, A. (presented 2015, March). GIS-based Identification and Evaluation of Significant Factors for Aging-Involved Crashes. Poster presentation at *University Transportation Center (UTC) Conference for the Southeastern Region*. The University of Alabama at Birmingham and Mississippi State University, Birmingham, AL. (Regional)

Ulak, M. B., Ozguven, E. E., & Kocatepe, A. (presented 2016, April). Investigation of Significant Factors Affecting Aging Involved Crashes: A Casual and Spatial Case Study in Northwest Florida. Poster presentation at *University Transportation Center (UTC) Conference for the Southeastern Region*. The University of Tennessee at Knoxville, Knoxville, TN. (Regional)

Ozel, H., Ozguven, E. E., Kocatepe, A., & Ulak, M. B. (presented 2015, July). Aging-focused Accessibility Assessment of Multi-modal Facilities towards Better Decision Making in Emergency Transportation Logistics. Presented at *27th European Conference on Operational Research*. University of Strathclyde, Glasgow, UK. (International)