

# Anupam Srivastava, Ph.D.

## Assistant Researcher

Department of Civil and Environmental Engineering  
University of Wisconsin, Madison

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### RESEARCH INTERESTS

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- Traffic flow theory
- Connected and autonomous vehicles
- Intelligent transportation systems
- Traffic control and operations

### EDUCATION

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- **University of California, Irvine (UCI) – Irvine, CA** Sep 2011 – Jul 2016  
PhD in Civil and Environmental Engineering (Transportation), Advisor: Dr. Wenlong Jin  
Dissertation: “Modified Cell Transmission Model for Bounded Acceleration”
- **University of Minnesota, Twin Cities (UMN) – Minneapolis, MN** Aug 2008 – Feb 2011  
Master of Science in Civil Engineering (Transportation), Advisor: Dr. Nikolas Geroliminis  
Thesis: “Development of the Next Generation Stratified Ramp Metering Algorithm based on freeway density”
- **Indian Institute of Technology (IIT), Kharagpur – India** 2001 - 2005  
Bachelor of Technology in Civil Engineering

### RESEARCH PROJECTS AND PROFESSIONAL EXPERIENCE

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- **University of Wisconsin, Madison** (Madison, WI) Aug 2019 – current  
*Assistant Researcher*
  - Ongoing projects with Mid America Freight Coalition (MAFC).
  - Investigating disturbance propagation under mixed traffic conditions, towards NSF CIS #1932932 (PI: Ahn).
- **University of Wisconsin, Madison** (Madison, WI) Aug 2016 – Aug 2019  
*Post-Doctoral Research Associate*, with Dr. Soyoun Ahn
  - Designing CAV control to mitigate stop and go speed oscillations in traffic, towards NSF CIS #1536599 (PI: Ahn).
  - Developing traffic flow models for mixed traffic with connected autonomous and human driven vehicles, towards NSF CAREER #1150137 (PI: Ahn).
- **University of California, Irvine** (Irvine, CA) Sep 2011 – Jul 2016  
*Graduate Research Assistant*
  - Incorporating bounded acceleration within first order macroscopic traffic models, *University of California Transportation Center (UCTC)*.
- **University of Minnesota, Twin Cities** (Minneapolis, MN) Aug 2008 – Feb 2011  
*Graduate Research Assistant*
  - Developing a new density based coordinated ramp metering, *Minnesota Department of Transportation (MnDOT) and Center for Transportation Studies (CTS)*.
  - Making the density-based ramp metering ready for testing and deployment within MnDOT’s IRIS framework, *Minnesota Traffic Observatory (MTO, UMN)*.
- **Oracle India Pvt. Ltd.** (Hyderabad, India) Aug 2005 – Apr 2008  
*Applications Engineer*

## TEACHING EXPERIENCE

Teaching Assistant, University of California, Irvine. Department of Civil and Environmental Engineering

Course Name	Avg. Instructor Rating
<ul style="list-style-type: none"> <li>• <b>CEE 122, Transportation Systems II: Operations and Control (Dr. Wenlong Jin)</b> Winter '12 (3.67/4.00), Winter '13 (3.75/4.00), Winter '15 (3.82/4.00) I taught lab and discussion sessions on operations and control of arterial roads. The labs focused on using Synchro 7 software for analysis of arterial signal operations.</li> </ul>	3.75 / 4.00
<ul style="list-style-type: none"> <li>• <b>CEE 124, Freeway Operations and Control (Dr. Stephen G. Ritchie)</b> Spring '14 (3.86/4.00), Spring '15 (3.94/4.00) I led discussions and labs on traffic flow concepts, freeway design, Highway Capacity Software (HCS) analysis, and assessing ramp metering control on freeway networks using micro-simulation software (TransModeler).</li> </ul>	3.90 / 4.00
<ul style="list-style-type: none"> <li>• <b>CEE 121, Transportation Systems I: Analysis and Design (Dr. Stephen G. Ritchie)</b> Fall '14 (3.79/4.00) I taught labs on geometric design of highways using Autodesk's AutoCAD and Civil 3D software.</li> </ul>	3.79 / 4.00

## PUBLICATIONS

([Google Scholar Profile](#))

### Peer-Reviewed Journals

- [Srivastava, A.](#), Chen, D., Ahn, S., 2019. Chained Asymmetric Driver Behavior under Stop-and-Go Oscillations: Modeling and Control Using Connected and Automated Vehicles. *Transportation Research Record: Journal of the Transportation Research Board* (under review).
- Chen, D., [Srivastava, A.](#), Ahn, S., 2019. Harnessing connected and automated vehicle technologies to control lane changes at freeway merge bottlenecks. *Transportation Research Part B* (under review).
- Chen, D., [Srivastava, A.](#), Ahn, S., Li, T., 2019. Traffic dynamics under speed disturbance in mixed traffic with automated and non-automated vehicles. *Transportation Research Part C* (in press). doi:10.1016/j.trc.2019.03.017.
- [Srivastava, A.](#), Jin, W.-L., 2017. A framework for deriving macroscopic demand functions from microscopic acceleration models. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2623. doi:10.3142/2623-05.
- [Srivastava, A.](#), Jin, W.-L., Lebacque, J.-P., 2015. A modified Cell Transmission Model with realistic queue discharge features at signalized intersections. *Transportation Research Part B* 81 (1), 302-315. doi:10.1016/j.trb.2015.05.013.
- [Srivastava, A.](#), Geroliminis, N., 2013. Empirical observations of capacity drop in freeway merges with ramp control and integration in a first-order model. *Transportation Research Part C* 30, 161-177. doi:10.1016/j.trc.2013.02.006.
- Geroliminis, N., [Srivastava, A.](#), Michalopoulos, P.G., 2011. A dynamic-zone-based coordinated ramp-metering algorithm with queue constraints for Minnesota's freeways. *IEEE Transactions on Intelligent Transportation Systems* 12 (4), 1576-1586. doi:10.1109/TITS.2011.2164792.
- Parthasarathi, P., [Srivastava, A.](#), Geroliminis, N., Levinson, D., 2011. The importance of being early. *Transportation* 38 (2), 227-247. doi:10.1007/s11116-010-9301-1.

### Proposals Co-authored (non-PI)

- Mixed Traffic Dynamics Under Disturbances: Impact of Multi-Class Connected and Automated Vehicles. *NSF CMMI CIS. Award Number:1932932 (PI: Soyoun Ahn, Danjue Chen), Start date: November 2019.*

### Reports

- [Srivastava, A.](#), Perry, E., Ahn, S., 2019. OSOW support for MAASTO Standing Committee on Highway Transport (SCOHT) and Motor Carrier Committee (MCC). Report No. MAFC 23. Mid America Freight Coalition.
- [Srivastava, A.](#), Perry, E., Ahn, S., Quantifying the Value of Multimodal Freight Investments. 2019. Report No. MAFC 22. Mid America Freight Coalition.
- [Srivastava, A.](#), Chitturi, M. V., Ahn, S., Rafferty, P., 2018. Analytical Methods for Work Zone Travel Time Reliability. Smart Work Zone Deployment Initiative (SWZDI), Iowa Department of Transportation.

## Conference Presentations

(\* - Presented by)

- Srivastava, A., Chen, D., Ahn, S., 2019. Chained Asymmetric Driver Behavior under Stop-and-Go Oscillations: Modeling and Control Using Connected and Automated Vehicles. **Transportation Research Board 99<sup>th</sup> Annual Meeting**, Washington DC, January 12-16, 2020 (scheduled for presentation).
- Chen, D., Srivastava, A., Ahn, S.\*, Li, T., Traffic dynamics under speed disturbance in mixed traffic with automated and non-automated vehicles. **23<sup>rd</sup> International Symposium on Transportation and Traffic Theory (ISTTT)**, Lausanne, Switzerland, July 23-26, 2019.
- Srivastava, A.\*, Chitturi, M., Ahn, S., Rafferty, P., Analytical methods for work zone travel time reliability. **Transportation Research Board 98<sup>th</sup> Annual Meeting**, Washington DC, January 13-17, 2019.
- Srivastava, A.\*, Ahn, S., Chen, D., Connected Autonomous Vehicle control to mitigate stop and go oscillation amplifications in mixed traffic. **Traffic Flow Theory and Characteristics Committee (TRB) Mid-Year Meeting**, Woods Hole, Massachusetts, August 07-09, 2018.
- Srivastava, A.\*, Jin, W.-L., A framework for deriving macroscopic demand functions from microscopic acceleration models. **Transportation Research Board 96<sup>th</sup> Annual Meeting**, Washington DC, January 08-12, 2017.
- Srivastava, A.\*, Jin, W.-L., A Lane Changing Cell Transmission Model for Modeling Capacity Drop at Lane Drop Bottlenecks. **Transportation Research Board 95<sup>th</sup> Annual Meeting**, Washington DC, January 10-14, 2016.
- Srivastava, A.\*, Jin, W.-L., Lebacque, J.-P., A modified Cell Transmission Model for signalized intersections. **Transportation Research Board 93<sup>rd</sup> Annual Meeting**, Washington DC, January 12-16, 2014.
- Geroliminis, N.\*, Srivastava, A., Michalopoulos, P.G., Experimental observations of capacity drop phenomenon in freeway merges with ramp metering control and integration in a first-order model. **Transportation Research Board 90<sup>th</sup> Annual Meeting**, Washington DC, January 23-27, 2011.
- Geroliminis, N.\*, Srivastava, A., Michalopoulos, P.G., A coordinated ramp metering algorithm for Minnesota's freeways based on density. **13<sup>th</sup> International Conference on Intelligent Transportation Systems (ITSC)**, Madeira Island, Portugal, September 19-22, 2010.
- Geroliminis, N.\*, Srivastava, A., Michalopoulos, P.G., Experimental observations in freeway merges with ramp metering control. **12<sup>th</sup> World Conference on Transportation Research (WCTR)**, Lisbon, Portugal, July 11-15, 2010.
- Parthasarathi, P.\*, Srivastava, A., Geroliminis, N., Levinson, D., The importance of being early. **12<sup>th</sup> International Conference on Travel Behavior Research (ICTBR)**, Jaipur, India, December 13-18, 2009.
- Srivastava, A.\*, Geroliminis, N., Michalopoulos, P.G., Development of a density based stratified ramp metering algorithm for Minnesota freeways. **Center for Transportation Studies: 20<sup>th</sup> Annual Transportation Research Conference**, Minneapolis, MN, May 19-20, 2009.

## Working Papers

- Kontar, W., Li, T., Srivastava, A., Chen, D., Ahn, S., Impact of multi-class Connected and Automated Vehicles on traffic dynamics, (extended abstract submitted to ISTTT 2021).
- Subraveti, H. H. S. N., Srivastava, A., Ahn, S., Knoop, V. L., van Arem, B., Lane assignment of Connected Automated Vehicles in mixed traffic to mitigate capacity drop at motorway bottlenecks, (extended abstract submitted to ISTTT 2021).

## **AWARDS AND SERVICES**

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### **Awards**

- Inaugural prize for Best Paper in Traffic Flow Theory (TFT Committee, TRB) - 2017
- Institute of Transportation Studies Dissertation Fellowship - 2016
- Best poster award, UCCONNECT conference - 2016
- 10<sup>th</sup> rank, Junior Mathematical Olympiad (JMO – 1996), 11<sup>th</sup> rank, Regional Mathematical Olympiad (RMO – 1997), and 20<sup>th</sup> rank, Senior Mathematical Olympiad (SMO – 1998) in Delhi, India

### **Referee**

- Transportation Research Part B
- Transportation Research Part C
- Transportation Research Record
- IEEE Intelligent Transportation Systems Conference
- Transportmetrica A: Transport Science
- International Journal of Transportation Science and Technology
- ASCE Journal of Transportation Engineering
- PROMET: Traffic and Transportation