

# Abhilasha Saroj

Ph.D. Candidate

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## 1. EDUCATION

**Georgia Institute of Technology, Atlanta, GA**

Expected, May 2020

Ph.D. Candidate, Civil Engineering (Transportation Engineering), GPA: 3.88/4.00

Minor, Computer Science

**Georgia Institute of Technology, Atlanta, GA**

August 2016

M.S., Civil Engineering (Transportation Engineering), GPA: 4.00/4.00

**Indian Institute of Technology Bombay, Mumbai, India**

May 2012

B.Tech., Civil Engineering, GPA: 7.52/10.00

## 2. PEER-REVIEWED JOURNAL PUBLICATIONS

- **Saroj, A.**, S. Roy, A. Guin, & M. Hunter. Sensitivity Analysis of Volume Data Imputations on a Real-Time Data-Driven Traffic Simulation Model's Performance Measures. Transactions of the Society for Modelling and Simulation International, 2020. *(under review)*
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Measuring Effectiveness and Operational Performance of Do Not Block the Box Campaigns. American Society of Civil Engineering Journal of Transportation Engineering, Part A: Systems. *(in preparation)*

## 3. CONFERENCE PRESENTATIONS WITH PROCEEDINGS (REFEREED)

- **Saroj, A.**, S. Roy, R. Fujimoto., A. Guin, & M. Hunter. A Sensitivity Analysis Study to Measure Impact of Real-Time Traffic Volume Data Imputations on Traffic Performance Measures. Winter Simulation Conference, National Harbor, Maryland, 2019. *(Ph.D. Colloquium - Extended Abstract, Podium Presentation, & Poster Presentation)*
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Operational Evaluation of Don't Block the Box Campaigns. Transportation Research Board, Washington, D.C., 2019. *(Extended Abstract & Poster Presentation)*
- **Saroj, A.**, S. Roy, R. Fujimoto, A. Guin, & M. Hunter. Smart City Real-Time Data-Driven Simulation. Winter Simulation Conference, Gothenburg, Sweden, 2018. *(Podium Presentation)*
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Video Tool for Manually Extracting Complex Traffic Data. Transportation Research Board, Washington, D.C., 2018. *(Podium Presentation by Dr. Guin)*
- **Saroj, A.**, S. Harris, A. Guin, M. Rodgers, & M. Hunter. Analysis of Vehicle Blocking Behavior on Intersection Performance. Transportation Research Board, Washington, D.C., 2017. *(Poster Presentation)*

## 4. TECHNICAL REPORTS

- Hunter, M. P., R. L. Guensler, A. Guin, **A. Saroj**, and S. Roy. "Smart Cities Atlanta - North Avenue." City of Atlanta, Atlanta, Georgia, December 2019.
- Guin, A., M. P. Hunter, M. O. Rodgers, **A. Saroj**, N. Choudhary, and H. G. Kim. "Operational Evaluation of Do Not Block the Box Campaigns in Georgia." Georgia Department of Transportation, Atlanta, Georgia, Report No. FHWA-GA-18-1443, April 2018.

- Guin, A., M. P. Hunter, M. O. Rodgers, and **A. Saroj**. “Enhanced Role of Activity Center Transportation Organizations in Regional Mobility.” Georgia Department of Transportation, Atlanta, Georgia, Report No. FHWA-GA-16-1316, February 2017.

## 5. CONFERENCE AND WORKSHOP PRESENTATIONS WITHOUT PROCEEDINGS

- **Saroj, A.**, S. Roy, A. Guin, & M. Hunter. Connected Corridor Volume Data Time Series Analysis and Imputation. ASCE International Conference on Transportation & Development, Seattle, Washington, May 26th to 29th, 2020.
- **Saroj, A.**, S. Roy, R. Fujimoto, A. Guin, & M. Hunter. Smart City Connected Digital Twin. GDOT/GTRI Research Expo, Atlanta, Georgia, September 13th, 2019.
- Roy, S., **A. Saroj**, A. Guin, & M. Hunter. Connected Infrastructure Data Loss Patterns. GDOT/GTRI Research Expo, Atlanta, Georgia, September 13th, 2019.
- Hunter, M., **A. Saroj**, S. Roy, R. Fujimoto, R. Guensler, and A. Guin. Smart City Real-Time Data Driven Simulation – North Avenue Digital Twin. ITE Summer Seminar, St. Simons Island, Georgia, July 21st to July 24th, 2019. (*Speaker - Dr. Hunter*)
- Hunter, M., **A. Saroj**, S. Roy, R. Fujimoto, R. Guensler, and A. Guin. North Avenue Smart City Digital Twin. Georgia Power – A Southern Company, Atlanta, Georgia, July 25th, 2019. (*Speaker - Dr. Hunter*)
- **Saroj, A.**, S. Roy, R. Fujimoto., R. Guensler, A. Guin, & M. Hunter. Smart City Digital Twin – Connected Data-Driven Traffic Simulation Model. Automated Vehicles Symposium, Orlando, Florida, July 15th to 18th, 2019.
- Roy, S., **A. Saroj**, A. Guin, & M. Hunter. Investigation of Data Loss Patterns in Real-Time Connected Transportation Infrastructure Data. Automated Vehicles Symposium, Orlando, Florida, July 15th to 18th, 2019.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Operational Evaluation of Don't Block the Box Campaigns. Southeastern Transportation Research, Innovation, Development, & Education Center Student Poster Competition, Washington, D.C., January 13th to 17th, 2019.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Operational Evaluation of Don't Block the Box Campaigns. Transportation Research Board Annual Meeting, Washington, D.C., January 13th to 17th, 2019.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Smart Corridor Real-Time Dynamic Simulation. University Transportation Center Conference for the Southeastern Region, Clemson, South Carolina, October 24th to 25th, 2018.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Operational Evaluation of DBTB Campaigns in Georgia. University Transportation Center Conference for the Southeastern Region, Clemson, South Carolina, October 24th to 25th, 2018.
- Hunter, M., A. Guin, R. Guensler, R. Fujimoto, M. Rodgers, **A. Saroj**, S. Roy, J. Bolen, & A. Biswas. Smart Cities Atlanta – Real-Time Data-Driven Transportation Simulation. GDOT/GTRI Research Expo., Atlanta, Georgia, September 6th, 2018.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, S. Harris, C. Maddox, M. O. Rodgers, & M. Hunter. Operational Evaluation of DBTB Campaigns in Georgia. GDOT/GTRI Research Expo., Atlanta, Georgia, September 6th, 2018.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Analysis of Vehicle Blocking Behavior on Intersection Performance. University Transportation Center Conference for the Southeastern Region, Gainesville, Florida, November 16th to 17th, 2017.
- Hunter, M., R. Guensler, A. Guin, M. O. Rodgers, R. Fujimoto, J. Bolen, A. Biswas, S. Roy, and **A. Saroj**. Energy, Emissions, and a Smarter North Avenue – City of Atlanta Demonstration Project, Smart Cities Advisory Board Meeting, Atlanta, Georgia, October 2017.
- **Saroj, A.**, A. Guin, S. Harris, C. Maddox, M. O. Rodgers, & M. Hunter. Operational Evaluation of DBTB Campaigns in Georgia. GDOT/GTRI Research Expo., Atlanta, Georgia, October 5th, 2017.
- **Saroj, A.**, S. Harris, A. Guin, M. Rodgers, & M. Hunter. Analysis of Vehicle Blocking Behavior on Intersection Performance. Transportation Research Board Annual Meeting, Washington, D.C., January 8th to 12th, 2017.

- **Saroj, A.**, A. Guin, S. Harris, C. Maddox, M. O. Rodgers, & M. Hunter. Enhanced Role of Activity Center Transportation Organizations in Regional Mobility & Operational Evaluation of DBTB Campaigns in Georgia. GDOT/GTRI Research Expo., Atlanta, Georgia, September 13th, 2016.
- **Saroj, A.**, S. Harris, A. Guin, M. O. Rodgers, & M. Hunter. Sensitivity Analysis of Vehicle Blocking Behavior on Intersections. University Transportation Center Conference for the Southeastern Region, Knoxville, Tennessee, March 31st to April 1st, 2016.
- **Saroj, A.**, A. Guin, S. Harris, C. Maddox, M. O. Rodgers, & M. Hunter. Enhanced Role of Activity Center Transportation Organizations in Regional Mobility. GDOT/GTRI Research Expo., Atlanta, Georgia, September 22nd, 2015.

## 6. RESEARCH EXPERIENCE

### Graduate Research Assistant, Transportation Systems Engineering, Georgia Tech

Smart Cities Atlanta – Real-Time Data-Driven Simulation of “North Avenue Smart Corridor”

Sponsored by City of Atlanta

Spring 2018 – Spring 2020

- Research Objective – To leverage connected corridor technologies to attain meaningful insights on traffic mobility and environmental impact measures such as travel time, queue lengths, energy consumption, CO<sub>2</sub> emissions, and NO<sub>x</sub> emissions etc.
- Developed a traffic simulation model capable of dynamically injecting connected corridor data in traffic simulation, performing simulation run, and visualizing the performance measures, at near real-time rate for North Avenue Smart Corridor in Atlanta, Georgia.
- Link to website - <http://realtime.ce.gatech.edu/coa/now/>

### Operational Evaluation of the “Don’t Block the Box” Campaigns

Sponsored by Georgia Department of Transportation

Fall 2014 – Fall 2017

- Research Objective – To investigate the effectiveness of “Don’t Block the Box” (DBTB) treatments in impacting driver’s blocking behavior at an intersection.
- Performed sensitivity analysis of vehicle blocking behavior to quantify the impact of vehicle blocking behavior in terms of intersection delay and loss of capacity on the developed Vissim probabilistic simulation model.
- Built a python-based software application – Georgia Tech Multi Video Player to aid video traffic data extraction to study vehicle’s blocking behavior at intersections. Link to website - <http://transportation.ce.gatech.edu/node/64>
- Before-After Comparative Analysis: Measured effectiveness of DBTB treatments by comparing estimates of propensity of a vehicle to block before and after the DBTB treatments at six selected field intersections in Atlanta, GA.

### Research Assistant, Transportation Systems Engineering, IIT Bombay

Fall 2013 – Spring 2014

- Worked on a methodology to measure street walkability index based on walking facilities, user perception survey and street connectivity
- Developed a VISSIM model to simulate the congestion impact from Bandra Worli Sea Link
- Assisted in conduct of road safety audit of Pilot Bus Rapid Transit System Corridor at Pune, India

## 7. TEACHING EXPERIENCE

### Graduate Teaching Assistant, Georgia Tech

Spring 2017 – Spring 2018

Course: CEE 4600 – Transportation Planning and Design

- Conducted laboratory lectures to teach fundamentals of traffic engineering and roadway design.
- Advised student groups on semester project of roadway design.
- Graded coursework – homework, laboratory reports and semester project reports.

### Co-Instructor, Georgia Tech (Ongoing)

Spring 2020

Course: CEE 6300 – Traffic Engineering; Scope – Traffic Simulation; Mentor – Dr. Michael Hunter

- Currently, designing syllabus, lecture content, and laboratory assignments for two-week duration on Traffic Simulations.
- Will deliver lectures, conduct laboratory sessions, and grade assignments.

## 8. PROFESSIONAL DEVELOPMENT

### Tech to Teaching Certificate Fellow, Georgia Tech

Fall 2019 – Spring 2020

- Program introduces the theories of pedagogy followed by a teaching practicum capstone.

### Coursera Certifications

- Neural Networks and Deep Learning November 2019
- Sequences, Time Series, and Predictions November 2019

## 9. AWARDS AND HONOURS

- National Science Foundation Travel Grant for Winter Simulation Conference, NSF, 2019
- National Center for Sustainable Transportation Dissertation Fund, NCST, 2019
- 2<sup>nd</sup> Best Poster, Southeastern Transportation Research, Innovation, Development & Education Center Student Poster Competition, 2019
- Winter Simulation Conference Travel Grant, Winter Simulation Conference Foundation, 2018
- Helen M. Overly Memorial Scholarship, Women's Transportation Seminar Atlanta, 2018
- John D. Edwards Memorial Scholarship, Institute of Transportation Engineers Georgia Section, 2017
- Institute of Transportation Engineers Scholarship, Institute of Transportation Engineers Georgia Section, 2016
- Traffic Bowl Winner Team, Institute of Transportation Engineers Georgia Section, 2015
- BA's Best Employee Award, Project: "Power Conversion Market Assessment of India", Boston Analytics, 2013
- National Certificate of Merit, Central Board of Secondary Education; Central Board Secondary Exam, 2005
- District Topper, Mumbai District Mathematics Teachers Association; Math Concept Examination, 2002

## 10. SERVICE TO UNIVERSITY

- Board Member, Graduate Student Advisory Council, CEE, Georgia Tech Fall 2016 –
- Mentor, Stempower Mentoring Program, Georgia Tech 2018-19
- President, Institute of Transportation Engineers, Georgia Tech 2017-18
- Vice President – Communications, Institute of Transportation Engineers, Georgia Tech 2016-17
- Secretary, Institute of Transportation Engineers, Georgia Tech 2015-16
- Social and Outreach Chair, American Society of Highway Engineers, Georgia Tech 2015-16
- Publicity Manager, Annual Technical Festival of Department of Civil Engineering, IIT Bombay 2010-11

## 11. SERVICE TO PROFESSION

- Friend and Peer Reviewer, Transportation Research Board Committees – AHB45 (1), ABJ70, ABE70 Spring 2019 –
- Program Committee Member and Peer Reviewer, Winter Simulation Conference 2020 – Agent Based Modeling Track
- Member: ACM SIG SIM, Women's Transportation Seminar Atlanta, American Society of Highway Engineers Georgia, Intelligent Transportation Systems Georgia, and American Society of Civil Engineers

## 12. SERVICE TO COMMUNITY

- TEAMBuzz Georgia Tech Volunteering Service (Spring & Fall 2017)
- Grader, 2016 MATHCOUNTS Georgia Competition at Marietta High School, Engineering Outreach Event, Institute of Transportation Engineers Georgia
- Teach for India – Tutored underprivileged students in Mumbai suburban school
- Event Assistant, Woodruff Arts Center: Create ATL Family Fun Event