Abhilasha Saroj

790 Atlantic Drive NW
School of Civil and Environmental Engineering
Georgia Tech
Atlanta, Georgia – 30332
404 528 4723
asaroj3@gatech.edu
abhilashasaroj.github.io/webpage/

EDUCATION

Georgia Institute of Technology, Atlanta, GA   Expected, August 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

PEER-REVIEWED JOURNAL ARTICLES

1. **Saroj, A.**, A. Guin, & M. Hunter. Deep LSTM Recurrent Neural Networks for Traffic Time Series Data Imputations. 2020. (in preparation)
2. **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. 2020. (in preparation)
3. **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Measuring Effectiveness and Operational Performance of Do Not Block the Box Campaigns. 2020. (in preparation)

CONFERENCE PRESENTATIONS WITH PROCEEDINGS (REFEREED)

1. **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)
2. **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)
3. **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)
4. **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 Delivered by Co-Author)
5. **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)

TECHNICAL REPORTS

1. 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.
2. 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.
3. 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.

CONFERENCE AND WORKSHOP PRESENTATIONS WITHOUT PROCEEDINGS

1. Hunter, M., A. Guin, **A. Saroj**, & S. Roy. Data Analysis for Smart Transportation, North Avenue Digital Twin. Invited presentation (online) for Midwest Energy Research Consortium (M-WERC). April 9th, 2020. (Approx. 10 real-time logins). *(Speaker - Dr. Hunter)*
2. Hunter, M., A. Guin, **A. Saroj**, & S. Roy. Smart City Real-Time Data Driven Simulation, North Avenue Digital Twin. Invited presentation (online) for A Better Half: Using Digital Twins to Improve City Infrastructure, Engineering News-Record (ENR), March 30th, 2020. (Approx. 250+ real-time logins). *(Speaker - Dr. Hunter)*
3. **Saroj, A.**, S. Roy, R. Fujimoto, A. Guin, & M. Hunter. Smart City Connected Digital Twin. GDOT/GTRI Research Expo, Atlanta, Georgia, September 13th, 2019.
4. Roy, S., **A. Saroj**, A. Guin, & M. Hunter. Connected Infrastructure Data Loss Patterns. GDOT/GTRI Research Expo, Atlanta, Georgia, September 13th, 2019.
5. Hunter, M., **A. Saroj**, S. Roy, R. Fujimoto, R. Guensler, & 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)*
6. Hunter, M., **A. Saroj**, S. Roy, R. Fujimoto, R. Guensler, & A. Guin. North Avenue Smart City Digital Twin. Georgia Power – A Southern Company, Atlanta, Georgia, July 25th, 2019. *(Speaker - Dr. Hunter)*
7. **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.
8. 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.
9. **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.
10. **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.
11. **Saroj, A.**, S. Roy, A. Guin, & M. Hunter. Smart Corridor Real-Time Dynamic Simulation. University Transportation Center Conference for the Southeastern Region, Clemson, South Carolina, October 24th to 25th, 2018.
12. **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.
13. 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.
14. **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.
15. **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.
16. 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.
17. **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.
18. **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.

19. **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.
20. **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.

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
- 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/
- Investigated real-time connected corridor data gap (missing data) characteristics
- Investigated performance of univariate and multivariate Long Short-Term Memory Recurrent Neural Networks for time series connected corridor data imputations

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

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   Spring 2020
Course: CEE 6300 – Traffic Engineering; Scope – Traffic Simulation; Mentor – Dr. Michael Hunter
- Designed syllabus, lecture content, and laboratory assignment for two-week duration on the topic of Traffic Simulations for graduate level course
- Delivered asynchronous (video recorded) lectures and synchronous online lectures

PROFESSIONAL DEVELOPMENT

- **Center for the Integration of Research, Teaching, and Learning (CIRTL) Associate Level Certificate**, May 2020
- **Tech to Teaching Certificate** in college teaching, Center for Teaching and Learning, Georgia Tech, May 2020
- **Neural Networks and Deep Learning**, Coursera Certification, November 2019
- **Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization**, Coursera Certification, April 2020
- **Structuring Machine Learning Projects**, Coursera Certification, April 2020
- **Convolutional Neural Networks**, Coursera Certification, May 2020
- **Sequence Models**, Coursera Certification, April 2020
- **Deep Learning Specialization**, Coursera Certification, May 2020
- **Sequences, Time Series, and Predictions**, Coursera Certification, November 2019

AWARDS AND HONOURS

- 2020/21 Civil and Environmental Engineering Future Faculty Fellow, Georgia Tech, 2020
- National Science Foundation Travel Grant for Winter Simulation Conference, NSF, 2019
- National Center for Sustainable Transportation Dissertation Fund, NCST, 2019
- 2nd 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, India, 2005
- District Topper, Mumbai District Mathematics Teachers Association; Math Concept Examination, 2002

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

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, Intelligent Transportation Systems Georgia, and American Society of Civil Engineers

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

LIST OF REFERENCES

1. **Dr. Michael P. Hunter**
   Professor (Ph.D. Adviser)
   School of Civil and Environmental Engineering
   Georgia Institute of Technology
   790 Atlantic Drive NW
   Atlanta, Georgia – 30332, USA
   Phone No: +1 404.385.1243
   Email: michael.hunter@ce.gatech.edu

2. **Dr. Randall L. Guensler**
   Professor (Dissertation Committee Member)
   School of Civil and Environmental Engineering
   Georgia Institute of Technology
   790 Atlantic Drive NW
   Atlanta, Georgia – 30332, USA
   Phone No: +1 404.894.0405
   Email: randall.guensler@ce.gatech.edu

3. **Dr. Michael O. Rodgers**
   Regents Researcher (Dissertation Committee Member)
   School of Civil and Environmental Engineering
   Georgia Institute of Technology
   790 Atlantic Drive NW
   Atlanta, Georgia – 30332, USA
   Phone No: +1 404.385.0569
   Email: michael.rodgers@ce.gatech.edu

4. **Dr. Angshuman Guin**
   Senior Research Engineer (Dissertation Committee Member)
   School of Civil and Environmental Engineering
   Georgia Institute of Technology
   790 Atlantic Drive NW
   Atlanta, Georgia – 30332, USA
   Phone No: +1 404.894.5830
   Email: angshuman.guin@ce.gatech.edu