Abhilasha Saroj

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1. EDUCATION

Georgia Institute of Technology, Atlanta, GA   2016 –
Ph.D. Candidate, Civil Engineering (Transportation Engineering), GPA: 3.87/4
Minor – Computer Science
Georgia Institute of Technology, Atlanta, GA   2014 – 16
M.S., Civil Engineering (Transportation Engineering), GPA: 4/4
Indian Institute of Technology Bombay, Mumbai, India   2008 – 12
B.Tech., Civil Engineering, GPA: 7.5/10.0

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, 2020. *(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, MD, 2019. *(Extended Abstract & Podium 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, DC, 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, DC, 2018. *(Podium Presentation by Dr. Guin)*
- **Saroj, A.**, Harris, S., A. Guin, M. Rodgers, & M. Hunter. Analysis of Vehicle Blocking Behavior on Intersection Performance. Transportation Research Board, Washington, DC, 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

- **Saroj, A.**, S. Roy, A. Guin, & M. Hunter. (2020, March). Connected Corridor Volume Data Time Series Analysis and Imputation. To be presented at ASCE International Conference on Transportation & Development (ICTD 2020). Seattle, WA.
- **Saroj, A.**, S. Roy, R. Fujimoto., A. Guin, & M. Hunter. (2019, September). Smart City Connected Digital Twin. Poster presented at GDOT/GTRI Research Expo. Atlanta, GA.

- Roy, S., **A. Saroj**, A. Guin, & M. Hunter. (2019, September). Connected Infrastructure Data Loss Patterns. Poster presented at GDOT/GTRI Research Expo. Atlanta, GA.
- 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. (2019, July). Smart City Digital Twin – Connected Data-Driven Traffic Simulation Model. Poster presented at Automated Vehicles Symposium. Orlando, FL.
- Roy, S., **A. Saroj**, A. Guin, & M. Hunter. (2019, July). Investigation of Data Loss Patterns in Real-Time Connected Transportation Infrastructure Data. Poster presented at Automated Vehicles Symposium. Orlando, FL.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Operational Evaluation of Don't Block the Box Campaigns (2019, January). Poster presented at Southeastern Transportation Research, Innovation, Development, & Education Center Student Poster Competition. Washington, DC.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. Operational Evaluation of Don't Block the Box Campaigns (2019, January). Poster presented at Transportation Research Board Annual Meeting. Washington, DC.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. (2018, October). Smart Corridor Real-Time Dynamic Simulation. Poster presented at 2018 University Transportation Center Conference for the Southeastern Region, Clemson. SC.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. (2018, October). Operational Evaluation of DBTB Campaigns in Georgia. Poster presented at 2018 University Transportation Center Conference for the Southeastern Region. Clemson, SC.
- Hunter, M., A. Guin, R. Guensler, R. Fujimoto, M. Rodgers, **A. Saroj**, S. Roy, J. Bolen, & A. Biswas. (2018, September 6). Smart Cities Atlanta – Real-Time Data-Driven Transportation Simulation. Poster presented at GDOT/GTRI Research Expo. Atlanta, GA.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, Harris, S., Maddox, C., M. O. Rodgers, & M. Hunter. (2018, September 6). Operational Evaluation of DBTB Campaigns in Georgia. Poster presented at GDOT/GTRI Research Expo. Atlanta, GA.
- **Saroj, A.**, N. Choudhary, H. Kim, A. Guin, M. Rodgers, & M. Hunter. (2017, November). Analysis of Vehicle Blocking Behavior on Intersection Performance. Poster presented at 2017 University Transportation Center Conference for the Southeastern Region. Gainesville, FL.
- Hunter, M., Guensler, R., Guin, A., Rodgers, M., Fujimoto, R., Bolen, J., Biswas, A., Roy, S., and **Saroj, A**. Energy, Emissions, and a Smarter North Avenue – City of Atlanta Demonstration Project, Smart Cities Advisory Board Meeting, Atlanta, Georgia, Oct 26, 2017.
- **Saroj, A.**, A. Guin, Harris, S., Maddox, C., M. Rodgers, & M. Hunter. (2017, October 5). Operational Evaluation of DBTB Campaigns in Georgia. Poster presented at GDOT/GTRI Research Expo. Atlanta, GA.
- **Saroj, A.**, Harris, S., A. Guin, M. Rodgers, & M. Hunter. (2017, January). Analysis of Vehicle Blocking Behavior on Intersection Performance. Poster presented at Transportation Research Board Annual Meeting. Washington, DC.
- **Saroj, A.**, A. Guin, Harris, S., Maddox, C., M. Rodgers, & M. Hunter. (2016, September 13). Enhanced Role of Activity Center Transportation Organizations in Regional Mobility & Operational Evaluation of DBTB Campaigns in Georgia. Poster presented at GDOT/GTRI Research Expo. 2016. Atlanta, GA.
- **Saroj, A.**, Harris, S., A. Guin, M. Rodgers, & M. Hunter. (2016, March). Sensitivity Analysis of Vehicle Blocking Behavior on Intersections. Poster presented at 2016 University Transportation Center Conference for the Southeastern Region. Knoxville, TN.
- **Saroj, A.**, A. Guin, Harris, S., Maddox, C., M. Rodgers, & M. Hunter. (2015, September 22). Enhanced Role of Activity Center Transportation Organizations in Regional Mobility. Poster presented at GDOT/GTRI Research Expo. Atlanta, GA.

6. TEACHING EXPERIENCE

Graduate Teaching Assistant, Georgia Tech   Spring 2017 – Spring 2018
Course: CEE 4600 – Transportation Planning and Design
- Conducted lab activity 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

Tech to Teaching Certificate, Center for Teaching and Learning, Georgia Tech   Fall 2019 – Spring 2020
- The program introduces the theories of pedagogy followed by two-week teaching capstone

7. RESEARCH AND WORK EXPERIENCE

Graduate Research Assistant, Transportation Systems Engineering, Georgia Tech
Smart Cities Atlanta – Real-Time Data-Driven Simulation of "North Avenue Smart Corridor" Jan'18 – Jan' 20
Sponsored by City of Atlanta
- Research Objective – To leverage connected infrastructure technologies to get meaningful insights on traffic mobility and environmental impact measures - travel time, queue lengths, energy consumption and emissions – CO_2, NO_x etc. Link to website - http://realtime.ce.gatech.edu/coa/now/
- Developed a traffic simulation model capable of dynamically injecting connected infrastructure data in traffic simulation, performing simulation run, and visualizing the performance measures, at near-real-time rate.
- The model simulates fifteen intersections of the North Avenue Smart Corridor in Atlanta, Georgia.

Operational Evaluation of the "Don't Block the` Box" Campaigns   Aug'14 – Dec'17
 Sponsored by Georgia Department of Transportation
- Research Objective – To investigate the effectiveness of "Don't Block the Box" (DBTB) treatments in minimizing driver's blocking an intersection.
- Performance of DBTB treatments is evaluated by:
  - Conducting a "before-after" DBTB treatment comparison study at six intersections in Atlanta, Georgia,
  - Quantifying the impact of vehicle blocking behavior on intersection performance using a microscopic simulation model.
- 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, GT-MVP to aid video traffic data extraction to study vehicle's blocking behavior at intersections. Link to website - http://transportation.ce.gatech.edu/node/64
- Measured effectiveness of DBTB treatments by comparing estimates of propensity of a vehicle to block at field intersections before and after the DBTB treatments.

Research Assistant, Transportation Systems Engineering, IIT Bombay, Mumbai, India   Sep'13 – May'14
- 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
- Conducted road safety audit of Pilot Bus Rapid Transit System Corridor at Pune, India

Analyst, Boston Analytics, Mumbai, India   Jul'12 – Aug'13
- Developed a quantitative model of an expansion roadmap estimating the market size for motors and drives
- Created an analytical model to gauge relative prospects of waste management market of 14 EU countries

8. AWARDS AND HONOURS

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

9. LEADERSHIP POSITIONS, COMMUNITY SERVICES, AND PROFESSIONAL AFFILIATIONS

Positions of Responsibility

Council Member, Graduate Student Advisory Council, CEE, Georgia Tech	Aug '16 –
Friend to TRB committees: AHB45 (1), ABJ70, ABE70	Jan '19 –
Mentor, Stempower, Georgia Tech	Aug'18 – May'19
President, Institute of Transportation Engineers, Georgia Tech	Aug '17 – May'18
Vice President for Communications, Institute of Transportation Engineers, Georgia Tech	Aug '16 – May '17
Secretary, Institute of Transportation Engineers, Georgia Tech	Sep '15 – May '16
Social/Outreach Chair, American Society of Highway Engineers, Georgia Tech	Sep '15 – May '16
Publicity Manager, Annual Technical Festival of Department of Civil Engineering, IIT Bombay	Apr '10 – Mar '11

Other Affiliations: WTS - Atlanta, ASHE, ITS - Georgia, TRB, and ASCE

Service to Community

TEAMBuzz Georgia Tech Volunteering Service (Spring & Fall 2017)
Teach for India - Tutored underprivileged students in Mumbai suburban school
Event Assistant, Woodruff Arts Center: Create ATL Family Fun Event

Extra-Curricular Activities, IIT Bombay

1st position, inter hostel general championship theme dance competition
Performed at professional theatres, India: Prithvi Theatre and National Centre for Performing Arts

10. COURSES TAKEN AT GEORGIA TECH

Urban Transportation Planning	Statistics in Transportation
Transportation, Energy and Air Quality	Traffic Engineering
Applied Policy Methods	PhD Research Methods
Activity-Travel Behavior Modeling and Simulation	Freight Planning and Analysis
Traffic Flow Theory	Data and Visual Analytics
Engineering Communications	Computational Problem Solving
Survey Design & Analysis	Advanced Data Analysis for Engineering
Computing for Data Analysis	Fundamentals of Teaching and Learning in Higher Education

11. CERTIFICATIONS

- Coursera – Neural Networks and Deep Learning
- Coursera – Sequences, Time Series, and Predictions

12. SELECTED ACADEMIC PROJECTS

A Comparison of Supervised Learning Algorithms for Wine Quality Prediction   Jun'19 – Jul'19
- Performed unsupervised exploratory analysis on wine quality dataset.
- Compared performance of supervised machine learning algorithms such as Logistic Regression, Random Ensemble Classifier, Support Vector Machine, etc., to predict wine quality based on its' physio-chemical characteristics. Project available at https://gitpeck.github.io/CX4240_project/

Interactive Interface for Assessment of American's Well-Being   Aug'16 – Nov'16
- Analyzed ATUS well-being dataset to better show the trends using D3 visualization and identified the significant factors affecting well-being of individuals in society using classification and regression modeling techniques.
- Visualizations presented on http://www.prism.gatech.edu/~asaroj3/Index_AS_v2.html

Variation in Crash Data and Regression-to-The-Mean Bias   Jan'15 – Apr'15
- Demonstrated regression-to-the mean bias effect applying Empirical Bayes method for crash estimation in December 2014 at 10 intersections located in Brooklyn, NY using crash data for December (2011-2013)

Comparative Fuel Analysis for the 2030 Cobb County Bus Fleet: LNG and B100 Algae   Aug'14 – Nov'14
- Analyzed Cobb County School District Fleet (Atlanta) for 2015 and made projections for the year 2030, considering three fuel scenarios (LNG and Diesel; 100% LNG; and B100 & Diesel)
- Determined upstream emissions using Argonne national Laboratory's GREET life cycle model for each fuel scenario under study; Estimated annual on-road emissions using Fuel Emissions Calculator (FEC)