

# RAJAT VERMA

Lyles School of Civil Engineering  
Purdue University, West Lafayette IN 47907  
+1(517)481-0901 • [verma99@purdue.edu](mailto:verma99@purdue.edu)

## RESEARCH INTERESTS

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Transportation network modeling, traffic simulation, data-driven mobility modeling, graphs in machine learning.

## EDUCATION

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<b>Purdue University</b> Ph.D., Civil Engineering Advisor: <a href="#">Dr. Satish V. Ukkusuri</a>	<i>West Lafayette, IN</i> 8/2019 - Present
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<b>Michigan State University</b> Master of Science, Civil Engineering. GPA: 4.0 Advisor: <a href="#">Dr. Timothy J. Gates</a> Thesis: <i>Evaluation of a rear-end collision avoidance system on winter maintenance trucks.</i>	<i>East Lansing, MI</i> 8/2017 - 5/2019
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<b>Indian Institute of Technology Roorkee</b> Bachelor of Technology, Civil Engineering. GPA: 8.64/10 Major project: <i>Design of sustainable drainage and rainwater harvesting for IIT Roorkee campus.</i>	<i>Roorkee, India</i> 7/2013 - 5/2017
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## RESEARCH EXPERIENCE

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<b>Purdue University</b> Graduate Research Assistant	<i>West Lafayette, IN</i> 8/2019 - Present
<ul style="list-style-type: none"><li>– Working on improving and introducing new features in <a href="#">A-RESCUE</a>, a custom microscopic traffic simulator designed to simulate urban hazard evacuation scenarios. Project funded by NSF.</li><li>– Analyzing the information spread mechanism and the potential for organizing capability of Uber drivers on online forum communities Reddit and <a href="#">UberPeople</a>.</li><li>– Analyzing changes in mobility patterns in U.S. cities due to COVID-19, considering socioeconomic factors.</li></ul>	

<b>Michigan State University</b> Graduate Research Assistant	<i>East Lansing, MI</i> 8/2017 - 7/2019
<ul style="list-style-type: none"><li>– Assessed the performance and effectiveness of a pilot rear-facing collision avoidance system on snowplows. Project sponsored by the Michigan Department of Transportation.</li><li>– Analyzed the effects of the 2017 speed limit change in Michigan on operating speeds based on three data sources.</li><li>– Developed OMR recognition system to automate processing of the annual state-wise safety belt survey data.</li></ul>	

Indian Institute of Science  
Research Intern  
Supervisor: [Dr. Ashish Verma](#)

Bengaluru, India  
5/2016 - 6/2016

- Worked on the sub-project “Spatial Analysis of Pedestrian Crowds” of the main project “[The Kumbh Mela Experiment: Measuring and Understanding the Dynamics of Mankinds Largest Crowd](#)”, Ujjain, India.
- Studied pedestrian traffic flow theory and the social force method to study the basic forms of interaction among pedestrian groups.

## PUBLICATIONS & PRESENTATIONS

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### Articles in Peer Reviewed Journals

2. Comparison of Support Vector and Non-Linear Regression Models for Estimating Large-Scale Vehicular Emissions, Incorporating Network-Wide Fundamental Diagram for Heterogeneous Vehicles. Saedi, R., **Verma, R.**, Zockaei, A., Ghamami, M., Gates, T.J.  
[Transportation Research Record, 2674\(5\), 7084 \(2020\)](#)
1. Behavioral analysis of drivers following winter maintenance trucks enabled with collision avoidance system.  
**Verma, R.**, Saedi, R., Zockaei, A., Gates, T.J.  
[Transportation Record Record, Vol 2673, Issue 10 \(2019\)](#)

### Articles in Conference Proceedings

1. A framework for incorporating the network fundamental diagram into large-scale emission estimation.  
Saedi, R., **Verma, R.**, Zockaei, A., Ghamami, M., Gates, T.J.  
[Journal of Transport & Health 9, S54-S55 \(2018\) \(Abstract\)](#)

### Conference Presentations

2. An efficient calibration methodology of microsimulation model for signalized intersections under heterogeneous and indisciplined traffic environment.  
Paul, M., **Verma, R.**, Ghosh, I.  
[Transportation Research Board 98th Annual Meeting, Washington D.C., 2019](#) (poster)
1. Behavioral analysis of drivers following winter maintenance trucks enabled with collision avoidance system.  
**Verma, R.**, Saedi, R., Zockaei, A., Gates, T.J.  
[Transportation Research Board 98th Annual Meeting, Washington D.C., 2019](#)

### Official Reports

1. Evaluation of a collision avoidance and mitigation system (CAMS) on winter maintenance trucks. Zockaei, A., Saedi, R., Gates, T.J., Savolainen, P.T., Schneider, B., Ghamami, M., **Verma, R.**, Fakhrmoosavi, F., Kavianipour, M., Shojaie, M., Singh, H., Zhou, C.  
[Michigan Department of Transportation Research Administration, OR 17-103 \(Sep 18, 2018\)](#)

## AWARDS & SCHOLARSHIPS

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<b>Best M.S. Student</b> Department of Civil Engineering, Michigan State University, \$200	5/2019
<b>Annual ITE Scholarship</b> Institute of Transportation Engineers - Michigan Chapter, \$3,000	2/2019
<b>Student Travel Award</b> 2018 International Conference on Transport & Health, \$800	6/2018
<b>Best Poster in Civil Engineering (Transportation)</b> 2018 Engineering Graduate Research Symposium, Michigan State University	3/2018
<b>Merit-cum-Means Scholarship</b> Indian Institute of Technology Roorkee, INR 200,000 ( $\approx$ \$2,600) over 2 years	1/2014 - 4/2015

## EXTRA-CURRICULAR COURSEWORK

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<b>Text Mining and Analytics</b> University of Illinois, Urbana-Champaign ( <a href="#">Coursera</a> )	2/2020
<b>Introduction to Graph Theory</b> University of California, San Diego ( <a href="#">Coursera</a> )	7/2018
<b>Bayesian Statistics</b> University of California, Santa Cruz ( <a href="#">Coursera</a> )	5/2018

## MEMBERSHIPS AND SERVICE

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### Professional Organizations

– American Society of Civil Engineers	3/2018 - Present
– Institute of Transportation Engineers	12/2017 - Present

### Student Bodies

– Purdue Graduate Student Government, <i>Purdue University</i>	3/2020 - Present
– Civil Engineering Graduate Student Advisory Council, <i>Purdue</i>	9/2019 - Present
– Graduate Employees Union, <i>Michigan State University</i>	11/2018 - 5/2019
– Civil Engineering Consortium, <i>I.I.T. Roorkee</i>	7/2016 - 12/2016
– Information Management Group, <i>I.I.T. Roorkee</i>	2/2015 - 5/2017
– National Service Scheme, <i>I.I.T. Roorkee</i>	8/2013 - 7/2014

## SKILLS

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Programming	<b>Languages:</b> Python, R, MATLAB, Java, JavaScript, HTML, CSS, SQL <b>Tools:</b> Anaconda, MySQL
Software	VISSIM, QGIS, Tableau, Gephi, AutoCAD, SPSS <b>Graphic Design:</b> Photoshop, Illustrator, InDesign, CorelDRAW
Languages	English (proficient), Hindi (native), Spanish (basic), Esperanto (basic)

Updated April 6, 2020