

# Pramesh Kumar

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| CONTACT INFORMATION | 122 Civil Engineering Building<br>500 Pillsbury Drive S.E.,<br>Minneapolis, MN 55455-0116 USA   | Voice: (612) 461 1643<br>Email: kumar372@umn.edu<br>Web: |
| RESEARCH INTERESTS  | Transit operations and planning, Transit integration with emerging modes, Uncertainty modeling in transportation, Transportation Network Optimization   |  |
| EDUCATION           | <b>University of Minnesota, Twin Cities</b><br><br>Ph.D. in Civil Engineering, 2022<br>Dissertation Topic: <i>Modeling and Design of Integrated Transit Systems with Strategic Passenger Behavior</i><br>Advisor: Prof. Alireza Khani<br>GPA: 3.95/4.0<br>Minor: Industrial Engineering<br><br>Master of Science in Civil Engineering, 2019<br>Thesis Topic: <i>Transit Origin Destination Estimation using Automated Data (Cale Anger Distinguished Master's Thesis Award, 2020)</i><br>Advisor: Dr. Alireza Khani<br>GPA: 4.0/4.0<br><br>Master of Science in Industrial and Systems Engineering, 2020<br>Advisor: Prof. William Cooper<br>GPA: 3.96/4.0<br><br><b>Indian Institute of Technology Roorkee</b><br><br>Bachelor of Technology in Civil Engineering, 2015<br>Project Topic: <i>Modeling travel time perception of passengers in multimodal transportation system</i><br>GPA: 8.06/10.0 |  |
| APPOINTMENTS        | Graduate Research Assistant (2017-2021)<br>Department of Civil, Environmental, and Geo-Engineering, University of Minnesota<br>Advisor: Dr. Alireza Khani<br><br>Undergraduate Research Assistant (Summer 2014)<br>School of Engineering, University of British Columbia<br>Advisor: Dr. Ahmed Idris  |  |
| HONORS AND AWARDS   | 2021                    Matthew J. Huber Award for Excellence in Transportation Research and Education, Center of Transportation Studies<br>Fall 2016,            College of Science and Engineering Fellowship, U of M<br>Summer 2020  |  |

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| 2020        | Cale Anger Distinguished Master's Thesis Award, U of M   |
| 2018        | Graduate Student Scholarship Award, ITS Minnesota  |
| 2019        | PhD Workshop on Transportation and Logistics Challenges Scholarship, Transportation Science and Logistics Society, INFORMS |
| 2017        | Transportation Science and Logistics Society Conference Scholarship, INFORMS   |
| Fall 2020   | Council of Graduate Students Conference Grant, U of M  |
| 2018-2021   | TRB Travel Award, Center for Transp. Studies, U of M   |
| 2019        | ISyE Graduate Student Travel Grant   |
| 2017-2018   | Sommerfeld Travel Grant, Department of Civil, Environmental, and Geo-Engineering., U of M                                  |
| Summer 2013 | IIT Visiting Undergraduate Research Student Award, University of British Columbia  |
| 2014        | Best Paper Award in Ideaz, Cognizance, IIT Roorkee   |
| 2008        | Award of Excellence, 5 <sup>th</sup> rank in All India Senior Secondary Examination  |

## PUBLICATIONS

### **Preprints/Under Review**

P. Kumar and A. Khani, "Schedule-based Transit Assignment with Online Information", 2022 [Preprint]

P. Kumar and A. Khani, "An Exact Method for Solving the Bi-level transit Network Design Problem", 2022 [Preprint]

X. Yu, P. Kumar, and A. Khani, "An Integrated Framework for Locating Depots in Shared Autonomous Vehicle Systems", 2022 [Preprint]

P. Kumar and A. Khani, "Designing an Integrated Autonomous Mobility-on-demand and urban Transit System", 2022 [Preprint]

### **Published Articles**

P. Kumar and A. Khani, "Adaptive Park-and-ride Choice on Time-dependent Stochastic Multimodal Transportation Network", *Networks and Spatial Economics*, 21, 771-800, 2021

P. Kumar, A. Khani, E. Lind and J. Levin, "Estimation and Mitigation of Epidemic Risk on a Public Transit Route using Automatic Passenger Count Data", *Transportation Research Record*, 2675(5):94-106, 2021

P. Kumar and A. Khani, "An Algorithm for Integrating Peer-to-peer Ridesharing and Schedule-based Transit System for First mile/Last Mile Access", *Transportation Research Part C: Emerging Technologies*, 122, 102891, 2021

P. Kumar and A. Khani, "Evaluating Special Event Transit Demand: A Robust Principal Component Analysis Approach", *IEEE Transactions on Intelligent Transportation*

*Systems*, vol. 22, no. 12, pp. 7370-7382, Dec. 2021

A. Webb, P. Kumar and A. Khani “Estimation of Passenger Wait Time using Automatically Collected Transit Data”, *Public Transport*, 12, 299-311, 2020

P. Kumar, A. Khani and G. Davis, “Transit Route Origin-Destination Matrix Estimation using Compressed Sensing”, *Transportation Research Record*, 2673(10):164-174, 2019

P. Kumar, A. Khani and Q. He, “A Robust Estimation of Transit Passenger Trajectories using Automated Data”, *Transportation Research Part C: Emerging Technologies*, 95: 731-747, 2018

### **Work in Progress**

P. Kumar and A. Khani, “Solution Algorithms for the Optimal Strategy Transit Network Assignment with Capacity Constraints”

P. Kumar and A. Khani, “Finding Optimal Locations of Park-and-ride Facilities”

### PEER-REVIEWED CONFERENCE PAPERS

P. Kumar and A. Khani, “The bi-level transit network design problem”, *6th Conference of Transportation Research Group of India*, Dec 14-17 2021, Tiruchirappalli (Trichy), Tamil Nadu

P. Kumar, A. Khani, E. Lind and J. Levin, “Estimation and Mitigation of Epidemic Risk on a Public Transit Route Using Automatic Passenger Count Data”, *100th Annual Meeting of Transportation Research Board*, Online

P. Kumar and A. Khani, “Solving Transit First Mile/Last Mile Problem with Ridesharing”, *Proceedings of the TSL Second Triennial Conference*, 2021

P. Kumar and A. Khani, “Adaptive Park-and-ride Choice on Time-dependent Stochastic Multimodal Transportation Network”, *99th Annual Meeting of Transportation Research Board*, Jan 12-16, 2020, Washington, DC

P. Kumar and A. Khani, “Finding Optimal Park-and-ride Facility Locations in Urban Network”, *Proceedings of the TSL First Triennial Conference*, July 26-29, 2017, Chicago, IL

P. Kumar and A. Khani, “A Probabilistic Trip Chaining Algorithm for Transit O-D Matrix Estimation using Automated Data”, *97th Annual Meeting of Transportation Research Board*, Jan 7-11, 2020, Washington, DC

P. Kumar and A. Khani, “Assessment of characterization procedures for the implementation of Anaerobic Digestion Model”, *Proceedings of Biosangam International Conference*, Nov 21-23, 2013, Allahabad, U.P.

### CONFERENCE PRESENTATIONS

P. Kumar and A. Khani, “Transit Network Design With Passenger Assignment Constraints” ,

*INFORMS Annual Meeting 2021*, Oct 24-27, 2021, Anaheim, CA

P. Kumar and A. Khani, "Schedule-based assignment for unreliable transit networks", *8th INFORMS Transportation Science and Logistics Society Workshop*, July 19-20, 2021, Online

P. Kumar, "Transit Origin-Destination using Automated Data", *3 Minute Thesis Competition Department of Civil, Environmental, and Geo-Engineering*, October 16, 2020

P. Kumar, J. Ye and A. Khani, "Designing Transit Network Integrated With MoD Systems", *INFORMS Annual Meeting 2020*, Nov 7-13, 2020, Online

P. Kumar and A. Khani, "Transit Origin-Destination for Special Events: A Compressed Sensing Approach", *6th International Symposium on Transit Data*, Aug 11-13, 2020, Online

P. Kumar and A. Khani, "Park-and-ride equilibrium model and facility location problem", *INFORMS Annual Meeting 2021*, Oct 20-23, 2019, Seattle, AZ

P. Kumar and A. Khani, "Adaptive park-and-ride choice on time-dependent stochastic multimodal transportation network", *INFORMS Annual Meeting 2021*, Oct 20-23, 2019, Seattle, AZ

P. Kumar and A. Khani, "Solving transit first mile/last mile problem with ridesharing", *Department of Civil, Environmental, and Geo-Engineering Graduate Student Welcome Weekend*, Feb 02, 2019, Minneapolis, MN

P. Kumar and A. Khani, "User and system optimal matching for dynamic ride sharing systems", *INFORMS Annual Meeting 2018*, Nov 4-7, 2018, Phoenix, AZ

P. Kumar and A. Khani, "Matching for dynamic ride-sharing system", *Center of Transportation Studies Research Conference*, Nov 2, 2018, Minneapolis, MN

P. Kumar and A. Khani, "Special event transit demand estimation using AFC data", *INFORMS Annual Meeting 2017*, Nov 22-25, 2017, Huston, TX

P. Kumar and A. Khani, "Analyzing U-Pass ridership trends", *Center of Transportation Studies Research Conference*, Nov 2, 2017, Minneapolis, MN

P. Kumar and A. Khani, "The impact of weather and socioeconomic factors on transit ridership", *Center of Transportation Studies Research Conference*, Nov 2, 2017, Minneapolis, MN

OTHER  
INVITED  
TALKS

P. Kumar, "Solving transit first mile/last mile problem with ridesharing", Invited Lecture in PhD Student Workshop on Transportation and Logistics Challenges 2019, Chicago, IL

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| TECHNICAL<br>REPORTS             | P. Kumar and A. Khani, “Analyzing U-Pass ridership trends”, <i>Minnesota Department of Transportation</i> , Met Council, 16M134  |   |
| GRANT<br>PROPOSAL<br>DEVELOPMENT | Designing an autonomous service to cover transit last mile in low-density areas<br>Sponsor: Minnesota Department of Transportation<br>Award amount: \$100,000<br>PI: Alireza Khani<br>Duration: 2021-23  |   |
| TEACHING<br>EXPERIENCE           | <p><b>Teaching Assistant</b><br/>Spring 2018-20 CEGE 3201: Transportation Engineering<br/>Spring 2022 CEGE 8217: Transportation Network Analysis</p> <p><b>Guest Lecturer</b><br/>Fall 2019 Guest Lecturer, CEGE 5180: Transportation Planning, Operations, and Control<br/>Fall 2020-21 Guest Lecturer, CEGE 5214: Transportation Systems Analysis</p> <p><b>Certification</b><br/>Teaching Assistant and Postdoc Professional Development Program, Center of Education and Innovation, University of Minnesota</p>                           |   |
| GRADUATE<br>COURSEWORK           | <input type="checkbox"/> Transportation Data Analysis<br><input type="checkbox"/> Theory of Traffic Flow<br><input type="checkbox"/> Trans. Network Analysis<br><input type="checkbox"/> Traffic Engg. and Modeling<br><input type="checkbox"/> Optimization Theory<br><input type="checkbox"/> Stochastic Dynamic Optimizn<br><input type="checkbox"/> Stochastic Processes<br><input type="checkbox"/> Decision Analysis<br><input type="checkbox"/> Reinforcement Learning (V)<br><input type="checkbox"/> Distribution of Public goods (V) | <input type="checkbox"/> Transit Planning and Management<br><input type="checkbox"/> Markov Mod of Traff Flow and Trav Demd<br><input type="checkbox"/> Dynamic Traffic Assignment<br><input type="checkbox"/> Discrete Optimization<br><input type="checkbox"/> Theory of Statistics I<br><input type="checkbox"/> Simulation<br><input type="checkbox"/> Network Science<br><input type="checkbox"/> Machine Learning<br><input type="checkbox"/> Games and Mechanisms (V)<br><input type="checkbox"/> Conic Optimization (V) |
| COMPUTER<br>SKILLS               | Programming Languages: Python, R, MATLAB, Julia, Java (in order of proficiency)<br>Software/Packages: QGIS, SQL, CPLEX, GUROBI, CVX, Autocad, R Shiny, L <sup>A</sup> T <sub>E</sub> X   |   |
| OPEN-SOURCE<br>TOOLS/CODES       | Transit Transfers Reliability Tool (App)<br>Static Traffic Assignment (Github)<br>Optimal Strategy Transit Assignment (Github)   |   |
| JOURNALS<br>REFEREED             | Transportation Research Part C: Emerging Technologies<br>IEEE Transactions on Intelligent Transportation Systems<br>European Journal of Operations Research<br>Journal of Intelligent Transportation Systems<br>Public Transport<br>Transportation Research Record<br>Journal of Advanced Transportation<br>Transportation Research Board Annual Meeting   |   |

UNDERGRADUATE Eugene Wong  
MENTORSHIP Halena Thomas

PROFESSIONAL Treasurer and Officer:  
SERVICES Interdisciplinary Transportation Student Organization, ITE, 2018-20

Planning Committee Member:  
ITE Student Leadership Summit, 2018  
Thomso, IIT Roorkee's Annual Cultural Festival, 2012-13

Judge/Reviewer:  
Undergraduate Research Symposium, U of M, 2018-20  
Council of Graduate Students Grants Committee, U of M, 2020

Session Chair:  
Network Modeling and Routing, INFORMS Annual Meeting, 2019

PROFESSIONAL Transportation Research Board of the National Academies of Sciences (TRB)  
AFFILIATIONS Institute for Operations Research and Management Sciences (INFORMS)  
Institute of Transportation Engineers (ITE)  
American Society of Civil Engineers (ASCE)

REFERENCES Available upon request