

Sreekumar M.

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Assistant Professor, Department of Civil Engineering, National Institute of Technology Karnataka, Surathkal, Mangalore - 575025, India

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Education

Indian Institute of Technology Bombay	MUMBAI, INDIA
Ph.D. in Civil Engineering (Specialization: Transportation Systems)	Jul '12 – Nov '18
Thesis: Multi-class continuum traffic flow modelling using traversable distance for dynamic travel time predictions	
Indian Institute of Technology Guwahati	GUWAHATI, INDIA
M. Tech in Civil Engineering (Specialization: Transportation Systems)	Jul '10 – Jul '12
Thesis: Development of car-following model for heterogeneous traffic with no lane discipline	
Government Engineering College, Thrissur	THRISSUR, INDIA
B. Tech in Civil Engineering	Jun '04 – Jun '08

Experience

National Institute of Technology Karnataka	SURATHKAL, INDIA
Assistant Professor Grade-I, Department of Civil Engineering	Oct '23 – present
National Institute of Technology Karnataka	SURATHKAL, INDIA
Assistant Professor Grade-II, Department of Civil Engineering	Sep '19 – Oct '23
Jyothi Engineering College, Thrissur	THRISSUR, INDIA
Associate Professor, Department of Civil Engineering	May '19 – Sep '19
National Institute of Technology Calicut	KOZHIKODE, INDIA
Ad-hoc Faculty, Department of Civil Engineering	Jul '18 – May '19
MET's School of Engineering, Mala	THRISSUR, INDIA
Lecturer in Civil Engineering	Aug '09 – Jul '10
KMC Constructions Limited, Hyderabad	THRISSUR, INDIA
Junior Engineer, Structures	Jan '09 – Aug '09

Research Areas

Traffic flow modelling and simulation; Analysis of Transportation Systems; Traffic Management and Design

Teaching

1. CV742 Urban Transport Planning - PG Core (Odd sem 2026)
2. CV853 Special Topcs in Transportation Engineering - PG Elective (Even sem 2026)
3. CV852 Traffic Engineering and Management - PG Elective (Odd sems 2020, 2021, 2022, 2023, 2024, 2025)
4. CV849 Traffic Simulation and Modelling - PG Elective (Even sems 2020, 2021, 2022, 2023, 2024, 2025)
5. CV201 Elements of Surveying - UG Core (Odd sems 2020, 2021, 2022, 2023, 2024, 2025, 2026)
6. CV100 Civil Engineering Materials and Construction - UG Core shared with Dr. Pavan G. S. (Even 2020, Odd 2020, Even sems 2022, 2023, 2024)
7. CV747 Transportation Design Studio - PG (Even sems 2020, 2026)
8. CV265 Surveying Practice - UG (Even sems 2021, 2022, 2023, 2024, 2025, 2026)
9. CV216 Civil Engineering Materials Lab - UG (Odd sems 2022, 2023, 2024, 2025)
10. CV367 Highway Materials and Concrete Testing Lab - UG (Even 2021)

List of Publications

Refereed Journals

1. Preetha, N., Krishnaveni, S., and Sreekumar, M., 2026. Combined dynamic traffic assignment and control framework for multi-class disordered traffic. *Transportation Letters* 18(7), pp. 1531–1550. <https://doi.org/10.1080/19427867.2026.2632962>

2. Arichandran, R., Mohan, M., and Sreekumar, M., 2025. Assessment of situational complexities and vehicle control difficulties for profiling driving skills. *Transportation in Developing Economies* 11(1), pp. 1. <https://doi.org/10.1007/s40890-024-00224-y>
3. Ramachandran, A., Mohan, M., and Sreekumar, M. 2025. Assessment of safety orientation in driving skills aligned with performance: a data-triangulation approach. *Traffic Safety Research* 8, pp. e000086. <https://doi.org/10.55329/tbpe4602>
4. Chapala, S. B. K., Nair, P., Sreekumar, M., and Bhavathrathan, B. K., 2024. A dynamic traffic assignment framework for policy analysis in cities with significant share of two-wheelers. *Transport Policy* 147, pp. 125-139. <https://doi.org/10.1016/j.tranpol.2023.12.019>
5. Krishnan, V. V., and Sreekumar, M., 2024. Modelling the Adoption of Alternate Fuel Vehicles: A Systematic Review and Future Directions. *Journal of the Eastern Asia Society for Transportation Studies* 15, pp. 676-689. <https://doi.org/10.11175/easts.15.676>
6. Krishnan, V. V., and Sreekumar, M., 2023. An integrated behavioral approach to analyze the adoption of electric vehicles in the context of a developing country. *Transport Policy* 142, pp. 162-172. <https://doi.org/10.1016/j.tranpol.2023.08.014>
7. Sreekumar, M., Joshi, S. M., Mathew, T. V., and Chatterjee, A., 2023. A multi-class first-order traffic flow model to explain disordered behaviour of vehicles. *Transportmetrica B: Transport Dynamics* 10(1), pp. 48-67. <https://doi.org/10.1080/21680566.2021.1957726>
8. Sreekumar, M., and Mathew, T. V., 2020. Modeling multi-class disordered traffic flow subject to varying vehicle composition using the concept of traversable distance. *International Journal of Modern Physics C* 31(12), pp. 1-25. <https://doi.org/10.1142/S0129183120501703>
9. Sreekumar, M., and Mathew, T. V., 2020. Modelling multi-class disordered traffic streams using traversable distance: a concept analogous to fluid permeability. *Transportmetrica A: Transport Science* 16(3), pp. 1531-1551. <https://doi.org/10.1080/23249935.2020.1764661>
10. Sreekumar, M., Joshi, S. M., Chatterjee, A., and Mathew, T. V., 2019. Analyses and implications of higher order finite volume methods on first-order macroscopic traffic flow models. *Transportation Letters* 11(10), pp. 542-557. <https://doi.org/10.1080/19427867.2017.1419843>

Published in Elsevier Procedia

11. Sreekumar, M., Malgonde, A., and Mathew, T., 2016. Applicability of continuum models with bi-regime flux Function for dynamic travel time predictions. *Transportation Research Procedia* 17, pp. 693-702. <https://doi.org/10.1016/j.trpro.2016.11.125>

Conference Proceedings

International Conferences

1. Preetha, N., and Sreekumar, M. Advancing DTA for multi-class disordered traffic networks: A node model integrated framework. *World Conference on Transport Research*, July 2026, Toulouse, France.
2. Paulose, E., Nair, P., and Sreekumar, M. A dual objective traffic assignment framework to optimize energy consumption for a mixed traffic of CVs and EVs. *World Conference on Transport Research*, July 2026, Toulouse, France.
3. Paulose, E., Nair, P., and Sreekumar, M. Energy-efficient traffic assignment framework incorporating electric vehicle characteristics. *8th Conference of Transportation Research Group of India*, December 2025, Guwahati, India.
4. Nair, P., Sreelakshmi, A., and Sreekumar, M. Optimization of traffic signal settings using a bi-level formulation with multi-class DTA. *8th Conference of Transportation Research Group of India*, December 2025, Guwahati, India.
5. Arichandran, R., Mohan, M., and Sreekumar, M. Assessment of traffic complexities and task difficulties for profiling driving skills. *7th Conference of Transportation Research Group of India*, December 2023, Surat, India.
6. Hameed, H., Minnamreddy, H. K. R., Nair, P., and Sreekumar, M. Applicability of DTA framework for traffic control and transport planning applications on networks with significant share of two-wheelers. *7th Conference of Transportation Research Group of India*, December 2023, Surat, India. https://doi.org/10.1007/978-981-96-1037-2_4
7. Nair, P., and Sreekumar, M. Dynamic traffic assignment using a multi-class continuum model for disordered traffic. *7th Conference of Transportation Research Group of India*, December 2023, Surat, India. https://doi.org/10.1007/978-981-96-1037-2_8

8. Nair, P., Naidu, A., and Sreekumar, M. A two-class continuum traffic flow model considering the disordered behavior at nodes. *International Conference on Sustainable Infrastructure: Innovations, Opportunities and Challenges*, April 2023, Surathkal, India. https://doi.org/10.1007/978-981-97-4852-5_8
 9. Chandra, K. R., Sreekumar, M., and Parameswaran S. A diffusively corrected continuum model to account for the spatial distribution of vehicles in multi-class disordered traffic flow. *14th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries*, December 2022, Mumbai, India.
 10. Naidu, A., and Sreekumar, M. Development of a multi-class continuum model for disordered traffic flow. *6th Conference of Transportation Research Group of India*, December 2021, Trichy, India.
 11. Gangadhar, K., and Sreekumar, M. Traffic assignment using a class specified density based travel time function. *6th Conference of Transportation Research Group of India*, December 2021, Trichy, India.
 12. Krishnan, V., and Sreekumar, M. Development of a hybrid choice model to evaluate the electric vehicle adoption in India. *6th Conference of Transportation Research Group of India*, December 2021, Trichy, India.
 13. Sreekumar, M., Arun, N., and Mathew, T. A methodology to represent the disordered behaviour of vehicles for modelling mixed traffic streams. *4th Conference of Transportation Research Group of India*, December 2017, Mumbai, India.
 14. Sreekumar, M., Malgonde, A., and Mathew, T. V. Numerical experiments on a continuum traffic flow model to demonstrate the (in)appropriateness of flux functions. *3rd Conference of Transportation Research Group of India*, December 2015, Kolkata, India.
 15. Sreekumar, M., and Mathew, T. V. Performance evaluation of continuum model's numerical solutions in short-term traffic predictions. *18th Euro Working Group on Transportation*, July 2015, Delft, The Netherlands.
 16. Sreekumar, M., Malgonde, A., and Mathew, T. V. Applicability of continuum models with bi-regime flux function for dynamic travel time predictions. *11th Transportation Planning and Implementation Methodologies for Developing Countries*, December 2014, Mumbai, India.
 17. Sreekumar, M., and Maurya, A. K. Need for a comprehensive traffic simulation model in Indian context. *IJCA Proceedings on International Conference on Emerging Frontiers in Technology for Rural Area* Vol. 5 (2012), pp. 13-18. <https://pdfs.semanticscholar.org/2160/52afa26a4170e81787f73a261f60c8b338d8.pdf>
- National Conferences**
18. Sreekumar, M., and Mathew, T. V. A macroscopic model-based approach to analyse and quantify the implications of disordered stream behaviour on travel time predictions. *National Conference on Resilient Infrastructure*, December 2020, Trivandrum, India.
 19. Sreekumar, M., Mathew, T. V., and Snehajan, S. Applicability of a simple continuum model on travel time prediction in mixed traffic conditions. *Colloquium on Transportation Systems Engineering and Management*, May 2014, Calicut, India.

Guidance

PhD Thesis

1. Arichandran R., Development of a framework to profile overconfidence and safety orientation in driving skills using subjective and objective methods (Joint guidance with Dr. Mithun Mohan), 2020-2026.
2. Preetha Nair, Dynamic traffic assignment for multi-class disordered traffic, 2021-to date.
3. Emy Paulose, Transportation network design considering electric vehicles, 2023-to date.

M. Tech Dissertation

1. Kalyan Reddy N, A multi-objective traffic assignment and network design for urban networks with electric vehicles, 2025-26.
2. Devika Anil, Modelling and capacity assessment of multi-class traffic streams with variable vehicle class proportions, 2025-26.
3. Malavika R. Nair, Performance assessment of multi-class dynamic traffic assignment: Robustness and scalability perspectives, 2025-26.
4. Sumit Sudhakar Thoke, A dynamic traffic assignment and signal control framework for multi-class traffic networks, 2025-26.
5. Chanda Pavani, Modelling and analysis of multiclass disordered traffic using SUMO, 2025-26.
6. Neethu Manoj, Analysis of bus bunching on urban networks using multi-class dynamic traffic assignment framework, 2025-26.

7. Shaik Musharof, Eco-driving behaviour analysis and energy consumption modelling of motorised electric two-wheelers, 2025-26.
8. Deepak R, Capacity expansion problem for urban networks with electric vehicles, 2024-25.
9. Manish Alawa, Rerouting behaviour of vehicles under road network disruptions – an analysis of route choice using microsimulation, 2024-25.
10. Vislavath Suresh Kumar, A machine learning-based approach to model the commuter route choice behaviour under rainfall-induced road network disruption, 2024-25.
11. Ashish Raj, Performance evaluation of urban traffic network using microsimulation: A case study of Mangaluru city, 2024-25.
12. Jyothish Krishna K T, Optimisation for bus transit route model design with transfer function: A case study of Mangaluru city, 2024-25.
13. Shaik Benazeer Hidaythullah, Performance evaluation of traffic signal coordination on an urban corridor using microsimulation, 2024-25.
14. Mohmed Sinan M P, Multi-objective traffic assignment framework considering electric vehicle characteristics, 2024-25.
15. Shashank Sathe, Integration of link and node models for dynamic traffic assignment in multi-class disordered traffic networks, 2024-25.
16. Sreelakshmi Ajay, A bi-level framework for combined dynamic traffic assignment and signal control for multi-class disordered traffic, 2024-25.
17. Krishnaveni S, Integration of class-specified dynamic traffic assignment and control for signal coordination on urban networks, 2023-24.
18. Sarang Patil, A congestion pricing model for multi-class traffic using dynamic traffic assignment, 2023-24.
19. Muthumari Ramu Jeeveswara, A framework for dynamic traffic assignment during disruptions, 2023-24.
20. Sarath S, An optimisation framework for positioning of in-motion wireless charging lanes for electric two-wheelers on urban networks, 2023-24.
21. Sneha P B, Dynamic traffic assignment for multi-class traffic considering emissions, 2023-24.
22. Bismi Assis, Optimal positioning of solar-grid hybrid EV charging stations considering urban travel characteristics, 2023-24.
23. Akhil C C, Mode choice analyses for estimating shift to electric vehicles in India, 2023-24.
24. Chanchal Pandey, A comprehensive study on the factors affecting the usage of electric vehicles in India, 2023-24.
25. Ritesh Thoshniwal, Evaluation of mechanical properties of semi-flexible asphalt mixtures with geopolymer grout, 2023-24.
26. Hana Zahwa Hameed, Integration of dynamic traffic assignment and control for multi-class disordered traffic, 2022-23.
27. M Haneeth Kumar Reddy, Optimal positioning of dynamic wireless charging lanes for two-wheelers in urban networks, 2022-23.
28. Athira S. Nayanar, Development of a tool for location optimization of electric vehicle charging facility in smart city planning, 2022-23.
29. Gagan Jagadeesh Pavasker, Calibration of the driver response parameter in a diffusively corrected multi-class traffic model, 2022-23.
30. Prashil Kishor Rao Moon, Analysis of the adoption behaviour of electric vehicles using revealed preference data, 2022-23.
31. Sai Bharath Kumar Chapala, Development of a dynamic traffic assignment framework for two-class disordered traffic flow, 2021-22.
32. Karunakanti Rahul Chandra, Modelling the effect of spatial distribution of vehicles in multi-class disordered traffic flow, 2021-22.
33. Chintapatla Snetha, Network-level calibration of a multi-class traffic flow model using the state-of-the-art optimization algorithms, 2021-22.
34. Tanmay Gupta, Variance-based sensitivity analysis for the calibration of computationally expensive traffic simulation models, 2021-22.

35. Tarun Patidar, Modelling the behaviour of adoption of electric vehicles in the context of a developing country, 2021-22.
36. Mohammed Sadiq, Analysis of the impact of the roadside bus stop on capacity using microsimulation, 2021-22.
37. M. N. Abhiram Naidu, Macroscopic simulation of an urban corridor having multi-class and disordered traffic flow, 2020-21.
38. K. Gangadhar, Traffic assignment using a class specified density based travel time function, 2020-21.
39. P. Ashoka Chakravarthi, Evaluation of data-driven models for prediction of trends in class-specific travel times, 2020-21.
40. Peddabudi Srikanth, Mode choice analysis of urban travellers using RP data: A case study of Hyderabad metropolitan region, 2020-21.

Administrative Works

At NITK, Surathkal

- Faculty Advisor (Music Club, 2026-to date)
- Co-ordinator (Life-skill Activity- Carnatic Music, 2026-to date)
- Faculty Advisor (M. Tech Transportation Engg. 2025-27 batch, 2025-to date)
- Hostel Warden (Quality & Maintenance, 2025-2026)
- Faculty Advisor (Films Club, 2024-2026)
- Co-ordinator (Department Placements, 2024-2025)
- Co-ordinator (Department Timetable Committee, 2023-2025)
- Faculty-in-charge (Department Analytics, Accreditation and Ranking Systems, 2021-to date)
- Faculty-in-charge (Surveying Lab and Stores, 2021-to date)
- Secretary (Department Post-Doctoral Committee, 2021-to date)
- Faculty Advisor (B. Tech Civil Engg. 2021-25 batch, 2021-2025)

Professional Activities

Reviewer

Journals: Transport Policy, Transportation Letters, Transportation Research Record, Transportation Research Interdisciplinary Perspectives, International Journal of Transportation Science and Technology, Transportation in Developing Economies (TIDE).

Conferences: Conference of Transportation Research Group of India (CTRG) 2021, 2023 and 2025, International Conference on Transportation Planning and Implementation Methodologies in Developing Countries (TPMDC) 2014, 2016 and 2024, World Conference on Transportation Research (WCTR) 2023.

Invited Lectures

Resource Person for five-day Workshop titled 'Transportation System Design' organised by NITK Surathkal, Nov 2023.

Talk title 1: Mode split and discrete choice models

Talk title 2: Introduction to Traffic Assignment

Resource Person for a technical talk titled 'Transport planning in the context of a developing country', organised by The Institution of Engineers (India), Mangaluru, Jul 2023.

Resource Person for a technical talk titled 'Traffic Simulation: Development and Application', organised by Jyothi Engineering College in association with the ISTE - Students Chapter, Thrissur, Nov 2022.

Resource Person for Faculty Development Programme titled 'State-of-the-art Modeling Techniques in Civil Engineering' organised by Vardhaman College of Engineering, Hyderabad, Sep 2021.

Talk title: An Insight into Traffic Flow Modelling and Simulation

Resource Person for AICTE sponsored Faculty Development Programme titled 'India's Strategic Transport Infrastructure Development Projects and Programs' organised by NITK Surathkal, Aug 2021.

Talk title: An Overview of Manual on Road Safety Audit

Resource Person on 'Traffic Engineering and Management', Short-term Training Programme organised as a part of twinning activity under TEQIP-III, Engineering College Jhalawar, Rajasthan, Feb 2020.

Resource Person on 'LaTeX and Technical Writing', Workshop organised by Jyothi Engineering College in association with the Institute of Engineers (India) - Students Chapter, Thrissur, Nov 2019.

Resource Person on 'Hands-on L^AT_EX and Technical Writing', Faculty Development Programme organised by AIKTC School of Engineering & Technology, Mumbai, Jan 2018.

Presentation titled 'Continuum Models and their Numerical Implementation for Real-time Applications in Mixed Traffic Conditions', Institute of Transport Studies, University of Leeds, UK, Mar 2015.

Sponsored Research and Consultancy Projects

Material Testing: Bitumen, Road aggregates (PMGSY project), Paver block, Concrete cube

Nov '20 – Sep '25

Collaborative Work (During PhD at IITB)

Newcastle and Mumbai Partnership on Sustainability and Environment Research (NAMPSER): Visited Newcastle University, UK in Feb-Mar 2015 to take part in the joint collaborative project between Newcastle University and IIT Bombay under UK-India Education and Research Initiative (UKIERI) funded by British Council.

Workshops/Conferences

NCRI 2020 Conference: Member of Scientific Committee National Conference on Resilient Infrastructure 2020) jointly organised by IIT Palakkad and Kerala Highway Research Institute, December 2020.
