

12. Research Guidance

i. Postdoctoral staff

1. Investigations on heavy vehicle crash severity on highways and mitigation measures
 - Dr. Sandeep Singh (**NPDF 2022**)
 - Works as Assistant Professor at the *National Institute of Technology (NIT) Puducherry*

ii. Completed doctoral theses

Serial No.	Title	Year Awarded	Name of the Scholar (present employer)	Supervisor	Co-supervisor (if any)
1	Estimation of Capacity for Single, Intermediate and Two-lane Inter-urban Roads	2016	Mr. Mohammad Mardani Nokandeh (Works in Iran)	Prof. Indrajit Ghosh	N.A.
2	Investigation of Traffic Efficiency and Violations at Signalized Intersections	2017	Mr. Sabyasachi Biswas (Assistant Professor in Civil Engineering Department, National Institute of Technology (NIT) Durgapur, West Bengal)	Prof. Indrajit Ghosh	N.A.
3	Operational Performance Measures for Intercity Roads	2017	Amardeep Boora (Assistant Professor in Civil Engineering Department, Jaypee University of Information Technology (JP) Solan, Himachal Pradesh)	Prof. Indrajit Ghosh	N.A.
4	Measurement and Analysis of Delay at Signal Controlled Intersections	2018	Arpita Saha (Assistant Professor in Civil Engineering Department, National Institute of Technology (NIT) Nagpur, Maharashtra)	Prof. Indrajit Ghosh	Prof. Satish Chandra, Civil Engineering, IITR
5	Capacity Analysis of Urban Streets under Mixed Traffic Conditions	2018	Subhadip Biswas (Assistant Professor in Civil Engineering Department, National Institute of Technology (NIT) Silchar, Assam)	Prof. Indrajit Ghosh	Prof. Satish Chandra, Civil Engineering, IITR

6	Investigation of Surrogate Road Safety Measures at Intersections	2020	Madhumita Paul (Assistant Professor in Civil Engineering Department, IIT Kharagpur , West Bengal)	Prof. Indrajit Ghosh	N.A.
7	Assessment of Pedestrian Safety at Signalized Intersections Using Traffic Conflict Technique	2022	Abhinav Kumar (Assistant Professor in Civil Engineering Department, National Institute of Technology (NIT) , Uttarakhand)	Prof. Indrajit Ghosh	N.A.

iii) Ongoing doctoral theses

Serial No.	Title	Year Awarded	Name of the Scholar	Supervisor	Co-supervisor (if any)
1	Understanding factors contributing to risky driving behaviour of motorized two-wheeler (MTW) riders	N.A.	Anurag Thombre	Prof. Indrajit Ghosh	Prof. Amit Agarwal, Civil Engineering, IIT Roorkee
2	The Role of Information in Planning Transients' Evacuation in Cyclone-Prone Areas	N.A.	Suvam Banerjee	Prof. Indrajit Ghosh	Prof. Rajat Rastogi, Civil Engineering, IITR
3	Realtime Conflict Based Models for Safety Evaluation at Uncontrolled Pedestrian Crossing Locations	N.A.	Kaliprasana Muduli	Prof. Indrajit Ghosh	Prof. Shimul (Md. Mazharul) Haque, Queensland University of Technology (QUT), Australia
4	Assessment and improvement of road safety in school zones	N.A.	Bhavna	Prof. Indrajit Ghosh	Prof. Satish Chandra, Civil Engineering, IIT Roorkee
5	Driving behaviour at roundabouts of various sizes from safety perspective	N.A.	Abhijnan Maji (PMRF)	Prof. Indrajit Ghosh	N.A.
6	Investigating pedestrian crossing behaviour and safety near urban foot over bridge	N.A.	Sk Sahin Uddin (CTRANS)	Prof. Indrajit Ghosh	Prof. Uttam Kumar Roy, Architecture and

					Planning, IIT Roorkee
7	Integrated traffic safety analysis and countermeasure assessment for crash prevention on National Highways	N.A.	Kommoju Prathyusha	Prof. Indrajit Ghosh	Prof. Amit Agarwal, Civil Engineering, IIT Roorkee
8	Implementing ADAS for Heavy Vehicles: Real-time Alerts for Distracted Driving and Unsafe Driving Patterns	N.A.	Mohd Shahzaib (Mehta Family School of Data Science & Artificial Intelligence)	Prof. Indrajit Ghosh	N.A.
9	Utilizing 3D Modeling and Simulation for Enhanced Safety on Highways	N.A.	Avnish Panwar (Mehta Family School of Data Science & Artificial Intelligence)	Prof. Indrajit Ghosh	N.A.

iv) Completed Masters theses

Serial No.	Title	Year Awarded	Name of the Scholar	Supervisor	Co-supervisor (if any)
1	Effect of approach width on saturation flow at signal controlled intersection	2013	S V Subrahmanyam Kommana	Prof. Indrajit Ghosh	Prof. Satish Chandra
2	Analysis of approach speed at signal controlled intersections with countdown display	2014	Devalla Jeevitha	Prof. Indrajit Ghosh	N.A.
3	Effect of countdown display on queue discharge characteristics	2014	Kottuvada C V Krishna	Prof. Indrajit Ghosh	N.A.
4	A study on LOS parameters for two-lane roads in mixed traffic	2014	Praveena Penmetsa	Prof. Indrajit Ghosh	Prof. Satish Chandra
5	Effect of carriageway and shoulder width on capacity of two lane rural roads	2015	Ved Prakash	Prof. Indrajit Ghosh	N.A.
6	Effect of turning-lane use on saturation flow at signal controlled intersection	2015	Jagbir Singh Kalra	Prof. Indrajit Ghosh	Prof. Satish Chandra
7	Analysis of accidents on hilly stretches of National Highways	2015	Madhusoodan Sharma	Prof. Indrajit Ghosh	Prof. M. Parida

8	Evaluation of pedestrian-vehicle intersection on an urban road	2015	Ajit Kumar Chaudhary	Prof. Indrajit Ghosh	N.A.
9	Analysis of operational performance measure for multilane interurban highways	2015	Shivraj Singh Meena	Prof. Indrajit Ghosh	Prof. Satish Chandra
10	Traffic safety assessment at intersection locations using microscopic simulation	2016	Akhil Rana	Prof. Indrajit Ghosh	Prof. Satish Chandra
11	Measurement and analysis of delay at uncontrolled intersections	2016	Apoorv Jain	Prof. Indrajit Ghosh	Prof. Satish Chandra
12	Effectiveness of signal countdown displays on pedestrian movements	2016	Sumit Kumar	Prof. Indrajit Ghosh	N.A.
13	Analysis of traffic flow on urban streets	2016	Shivendra	Prof. Indrajit Ghosh	Prof. Satish Chandra
14	Analysis of pedestrian conflicts with right turning traffic at signalized intersections	2017	Abhinav Kumar	Prof. Indrajit Ghosh	Prof. Rajat Rastogi
15	Effect of pedestrian movement on the capacity of two-lane urban roads	2017	Sourav Das	Prof. Indrajit Ghosh	N.A.
16	Safety assessment at unsignalised intersections using post encroachment time (PET)	2017	Tarun Pakhariya	Prof. Indrajit Ghosh	N.A.
17	Analysis of vehicular deceleration characteristics leading to unsafe driving situations	2018	Joginder Pratap Singh	Prof. Indrajit Ghosh	Prof. M. Parida
18	Investigation of driver behaviour at the onset of a yellow phase transition	2018	Mukul Giri Goswami	Prof. Indrajit Ghosh	N.A.
19	Development of accident prediction model for signalized intersections	2018	Abhishek Kumar Singh	Prof. Indrajit Ghosh	N.A.
20	Development of accident prediction model for unsignalized intersections	2018	Aparna Singh	Prof. Indrajit Ghosh	N.A.
21	Evaluation of intersection safety using speed-based indicators in microsimulation	2018	Jagjit Kumar	Prof. Indrajit Ghosh	N.A.
22	Prediction of crashes at unsignalized intersections after safety improvements	2019	Prashank Kumar	Prof. Indrajit Ghosh	N.A.

23	Safety improvement at signalized intersections using microsimulation modelling	2020	Yeske Dhananjay Suresh	Prof. Indrajit Ghosh	N.A.
24	Investigation of Pedestrian crossing behavior during end of vehicular red indication at Intersections	2020	Manushreshtha Yadav	Prof. Indrajit Ghosh	N.A.
25	Understanding Behavior of Two Wheelers at Signalized Intersection	2020	Sandeep Kumar	Prof. Indrajit Ghosh	N.A.
26	Factors affecting an individual's willingness to evacuate during short-notice natural disasters	2021	Shekhar Singh	Prof. Indrajit Ghosh	N.A.
27	Factors Influencing the Adoption of Electric Vehicles	2021	Suhail Akhtar (DAAD KOSPIE Scholarship)	Prof. Indrajit Ghosh	Prof. Constantinos Antoniou, Technical University of Munich, Germany
28	Assessment of Non-Lane based movement of Two-wheelers on Urban roads under different Traffic conditions	2021	Sagar Keshari	Prof. Indrajit Ghosh	N.A.
29	Safety Improvements at Hazardous Intersection Locations	2021	Nawid Shirzai	Prof. Indrajit Ghosh	N.A.
30	Sentiment analyses using social media data for blackspot identification	2022	Megha Rajpurohit	Prof. Indrajit Ghosh	N.A.
31	Pedestrian-vehicle interactions at uncontrolled mid-block crosswalks	2022	Gagan Gupta (DAAD KOSPIE Scholarship)	Prof. Indrajit Ghosh	Prof. Constantinos Antoniou, Technical University of Munich, Germany
32	Factors affecting frequency and severity of road crashes on intercity highways	2022	Vaibhav Bhatia	Prof. Indrajit Ghosh	N.A.
33	Safe crossing facilities for pedestrians on intercity highways	2023	Deorishabh Sahu	Prof. Indrajit Ghosh	N.A.

34	Efficient ambulance services to improve traffic crash emergency response	2023	Manish Kumar Yadav (DAAD KOSPIE Scholarship)	Prof. Indrajit Ghosh	Prof. Constantinos Antoniou, Technical University of Munich, Germany
35	Landslide event detection using Twitter data	2023	Jai Prakash	Prof. Indrajit Ghosh	N.A.
36	Deep learning with attention mechanism for pedestrian crossing intention prediction in unsignalized crossing environment	2023	Vikas Sahu	Prof. Indrajit Ghosh	N.A.
37	Driver yield prediction at zebra crossing location	2022	Anshul Maurya	Prof. Indrajit Ghosh	N.A.
38	Road Assets Anomaly Detection using Deep Learning	2022	Tirtharaj Pal (Mehta Family School of Data Science & Artificial Intelligence)	Prof. Indrajit Ghosh	N.A.

v) Ongoing Masters theses

Serial No.	Title	Year of registration	Name of the Scholar	Supervisor	Co-supervisor (if any)
1	Identification of near-missed at urban roundabouts	2023	Aditya Raj (Mehta Family School of Data Science & Artificial Intelligence)	Prof. Indrajit Ghosh	N.A.
2	Road distress propagation model	2023	Om Subhash Shrivastav (Mehta Family School of Data Science & Artificial Intelligence)	Prof. Indrajit Ghosh	N.A.
3	Vehicle-pedestrian interactions at unsignalized crosswalks	2023	Upesh Kumar Verma (Mehta Family School of Data Science & Artificial Intelligence)	Prof. Indrajit Ghosh	N.A.

4	Severity of traffic conflicts using road user trajectory data	2023	Premjit Murmu (Mehta Family School of Data Science & Artificial Intelligence)	Prof. Indrajit Ghosh	N.A.
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vi. Minor Project/Practical Problems for IITR UG Students (130+ students)

1. Relationship between Time Headway and Free Flow Speed [2012-13]
2. Study of Traffic at Signalized Intersections [2012-13]
3. Analysis of Traffic Behaviour at Signalised Intersections Enabled with Countdown Timer [2013-14]
4. Questionnaire Survey related to user perception of countdown timer [2013-14]
5. Stop and Go Modelling on Signalized Intersection [2014-15]
6. Microsimulation modeling of traffic at unsignalized intersections [2015-16]
7. Safety assessment at unsignalized intersections [2015-16]
8. Safety assessment of unsignalized intersection through microsimulation modelling [2016-17]
9. Safety assessment of signalized intersections using microsimulation modelling [2016-17]
10. Optimizing the traffic parameters for intercity two-lane highways using microsimulation [2016-17]
11. Study on Red Light Violations at signalized intersections [2017-18]
12. Calibrating the Weidemann's vehicle following model for unsignalized intersections in India [2017-18]
13. Enhancement of safety at unsignalized intersections using traffic calming and management measures [2017-18]
14. Analysis of heterogeneous traffic: A case study from Chennai, India [2018-19]
15. Prediction of sustainability and estimation of future expansion of Dehradun airport [2018-19]
16. Automatic traffic data collection using Image Processing Technique [2018-19]
17. Automated Number Plate detection [2019-20]
18. Enhancement of routine transport in IIT Roorkee campus [2019-20]
19. Automatic Traffic Control System Using Crowdsourced Data [2019-20]
20. Real-time monitoring of road roughness [2019-20]
21. E-bikes. An upcoming revolution in transport [2019-20]
22. Investigating the impacts of Covid-19 on urban travel behavior and mode choices [2020-21]
23. Understanding the airline passenger travel behavior due to COVID-19 pandemic [2020-21]
24. Investigation of Road Traffic movements using Artificial Intelligence [2020-21]
25. Identification of problems with BRTS in India [2020-21]
26. Use of AI in traffic movement and road safety [2021-22]
27. Waste management generated by railways [2021-22]

28. Predicting travel mode choice using machine learning [2021-22]
29. Road sign Classifier [2021-22]
30. Disruption in Railways due to COVID -19 [2021-22]
31. Impact of COVID-19 on Indian Seaport Transportation and its effect on Industries [2021-22]
32. Analysis of impact and need of self-driving cars [2021-22]
33. Energy efficient model for the coming train system [2021-22]
34. Driver behaviour analysis at traffic lights using ML and AI [2021-22]
35. How demand supply chain in railways affected due to COVID-19 Lockdown? [2021-22]
36. Analysing Technical Challenges to the introduction of Electric Vehicles [2021-22]
37. Determination of driver behaviour at pedestrian crossings using the representation of surrogate safety measures [2022-23]
38. Traffic violation detection with the help of computer vision [2022-23]

vii. Summer Undergraduate Research Award (SURA) supported Research Projects for IITR UG students (4 students)

1. Contribution of Mobile Phone and Seat Belt Use in Road Accidents: An Observational Study (Summer 2015)
2. Microscopic modelling of Unsignalized Intersections Using VISSIM Microsimulation Software (Summer 2017)

viii. Summer Interns/Project Assistants: Non-IITR Students

1. Amrita Shandilya, UG student, Department of Civil Engineering, NIT Patna (May 26 – July 7, 2015)
2. Anjali Sharma, UG student, Department of Chemical Engineering, Dr BR Ambedkar National Institute of Technology (NIT), Jalandhar (December 12, 2016 - January 5, 2017)
3. Sudhir Kumar, UG student, Department of Civil Engineering, NIT Agartala (May 16 – June 15, 2016)
4. Tanoy Majumder, UG student, Department of Civil Engineering, NIT Agartala (May 16 – June 15, 2016)
5. Rubui Debbarma, UG student, Department of Civil Engineering, NIT Agartala (May 16 – June 15, 2016)
6. Rima Das, UG student, Department of Civil Engineering, NIT Agartala (May 16 – June 15, 2016)
7. Uma Bhakta, UG student, Department of Civil Engineering, Vel Tech University, Chennai (May 29 – July 15, 2017)
8. Abhishek Kumar Singh, UG student, Department of Civil Engineering, NIT Tiruchirappalli (May 15 – July 14, 2017)
9. Sidhaarth Jain, UG student, Department of Civil Engineering, NIT Tiruchirappalli (May 15 – July 14, 2017)

10. Pawan Prakash, UG student, Department of Civil Engineering, NIT Tiruchirappalli (May 15 – July 14, 2017)
11. Durba Kundu, UG student, Department of Civil Engineering, IEST Shibpur (May 18 – July 18, 2018)
12. Muskaan Sethi, UG student, Department of Civil Engineering, Dr BR Ambedkar National Institute of Technology, Jalandhar (May 18 – July 18, 2018)

ix. SPARK Interns: Non-IITR Student

13. Shuvam Mukherjee, UG student, Department of Civil Engineering, IEST Shibpur (May 18 – July 18, 2018)
14. Soumyodeep Chatterjee, UG student, Department of Civil Engineering, IEST Shibpur (May 20 – July 18, 2019)
15. Gaurav Choudhary, UG student, Department of Civil Engineering, NIT Hamirpur (May 21 – July 23, 2021) Topic: Impact of countdown timers at signalized intersections on the behaviour of driver
16. Shivam Mishra, Vishwakarma Institute of Information Technology, Pune (June 6, 2022 – July 28, 2022) Topic: AI-Based Software Development Kit for Driver Safety Evaluation
17. Barun Das, Department of Civil Engineering, IIT Kharagpur (15th May, 2023 - 10th July 2023), Topic: Estimation of pothole volume using stereo vision
18. Pragya Ojha, School of Computer Science and Engineering, Vellore Institute of Technology (VIT), Chennai (27th May to 12th July, 2024), Topic: 3D reconstruction of potholes
19. Apeksha Shah, School of Technology Computer Science & Engineering, Pandit Deendayal Energy University, Gandhinagar (20th May to 5th July, 2024), Topic: Automated severity classification of traffic conflicts from UAV data

13. Research Outcome

i) Research publications in journals

2. Muduli, K. and **Ghosh, I.** (2024) Prediction of Vehicular Yielding Intention While Approaching a Pedestrian Crosswalk, DOI:10.1177/03611981241252835, *Transportation Research Record*, Sage Publications.
3. Singh, D., Das, P., and **Ghosh, I.** (2024). Prediction of pedestrian crossing behaviour at unsignalized intersections using machine learning algorithms: analysis and comparison, DOI: 10.1007/s12193-024-00433-0, *Journal on Multimodal User Interfaces*, Springer.
4. Keshari, S., Thombre, A., and **Ghosh, I.** (2024). Motorized Two-Wheeler Overtaking: An Analysis of Strategies and Factors Affecting Overtaking Duration on Undivided Highways in Heterogeneous Traffic Conditions. DOI:10.1177/03611981231217285, *Transportation Research Record*, Sage Publications.
5. Singh, D., Das, P., and **Ghosh, I.** (2024). Bridging conventional and proactive approaches for road safety analytic modeling and future perspectives. DOI: 10.1007/s41062-024-01426-4, *Innovative Infrastructure Solutions*, Springer, 9(128), 1-21.

6. Singh, D., Das, P. and **Ghosh, I.** (2024). Conflict-Based safety evaluations at unsignalized intersections using surrogate safety measures. DOI: 10.1016/j.heliyon.2024.e27665, *Heliyon*, Elsevier.
7. Singh, D., Das, P., and **Ghosh, I.** (2024). Driver behavior modeling at uncontrolled intersections under Indian traffic conditions. DOI: 10.1007/s41062-024-01425-5, *Innovative Infrastructure Solutions*, Springer, 9(4), 1-11.
8. Singh, D., Das, P. and **Ghosh, I.** (2023). Surrogate Safety Assessment of Traffic Facilities under Ordered and Disordered Traffic Condition: Systematic Literature Review. DOI: 10.1007/s12205-023-0979-y, *KSCE Journal of Civil Engineering*, Springer.
9. Thombre, A., **Ghosh, I.** and Agarwal, A. (2023). Examining factors influencing the severity of motorized two-wheeler crashes in Delhi. *International Journal of Injury Control and Safety Promotion*, Taylor & Francis.
10. Muduli, K. and **Ghosh, I.** (2023) Prediction of the Future State of Pedestrians While Jaywalking Under Non-lane-based Heterogeneous Traffic Conditions. Ms. No. 22-01244, DOI: 10.1177/03611981231161619, *Transportation Research Record*, Sage Publications.
11. Paul, M., and **Ghosh, I.**, Haque, M.M. (2022). The effects of green signal countdown timer and retiming of signal intervals on dilemma zone related crash risk at signalized intersections under heterogeneous traffic conditions. DOI: 10.1016/j.ssci.2022.105862, *Safety Science*, Elsevier. Volume 154, October 2022.
12. Kumar, A., and **Ghosh, I.** (2022). Non-compliance behaviour of pedestrians and the associated conflicts at signalized intersections in India. DOI: 10.1016/j.ssci.2021.105604, *Safety Science*, Elsevier. Volume 147, March 2022.
13. Paul, M., and **Ghosh, I.** (2021). Development of conflict severity index for safety evaluation of severe crash types at unsignalized intersections under mixed traffic. DOI: 10.1016/j.ssci.2021.105432. *Safety Science*, Elsevier. Volume 144, December 2021.
14. Dhoke, A., Kumar, A., and **Ghosh, I.** (2021). Hazard-Based Duration Approach to Pedestrian Crossing Behavior at Signalized Intersections. DOI: 10.1177/03611981211003102. *Transportation Research Record*, Sage Publications.
15. Kumar, A., and **Ghosh, I.** (2020). Analysis of Spontaneous Order of Pedestrian-Vehicle Interactions at Signalized Intersections. DOI: 10.1177/0361198120945994. *Transportation Research Record*, Sage Publications.
16. Biswas, S., and **Ghosh, I.** (2020). Reliability modeling on driver's decision during yellow phase. Vol 118, No. 4, *Current Science*, pp. 654-661.
17. Biswas, S., Chandra, S. and **Ghosh, I.** (2020). An advanced approach for estimation of PCU values on undivided urban roads under heterogeneous traffic conditions, *Transportation Letters: The International Journal of Transportation Research*, Taylor & Francis, Vol 12, No. 3, pp. 172-181.
18. Biswas, S., Chandra, S. and **Ghosh, I.** (2020). Side friction parameters and their influences on capacity of Indian undivided urban roads. DOI: 10.1016/j.ijtst.2020.03.007. *International Journal of Transportation Science and Technology*, Elsevier.

19. Paul, M., and **Ghosh, I.** (2019). Post Encroachment Time Threshold Identification for Right-Turn Related Crashes at Unsignalized Intersections on Intercity Highways Under Mixed Traffic. DOI: 10.1080/17457300.2019.1669666. *International Journal of Injury Control and Safety Promotion*, Taylor & Francis.
20. Paul, M., and **Ghosh, I.** (2019). Influence of green signal countdown timer on severe crash types at signalized intersections due to red light violations. DOI: 10.1080/19427867.2019.1651571. *Transportation Letters: The International Journal of Transportation Research*, Taylor & Francis.
21. Saha, A., Chandra, S. and **Ghosh, I.** (2019). Assessment of Level of Service for Urban Signalized Intersections in India, Vol. 117, No. 9, *Current Science*, pp. 1516-1521.
22. Kumar, A., Paul, M., and **Ghosh, I.** (2019). Analysis of Pedestrian Conflict with Right Turning Vehicles at Signalized Intersections in India, DOI:10.1061/JTEPBS.0000239, *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*, Vol. 145, No. 6.
23. Saha, A., Chandra, S., and **Ghosh, I.** (2019). Modeling Platoon Dispersion at Signalized Intersections in Mixed Traffic Scenario. *Arabian Journal for Science and Engineering*, Elsevier, Vol. 44, Issue 5, pp. 4829–4838.
24. Saha, A., Chakraborty, S., Chandra, S. and **Ghosh, I.** (2018). Kriging Based Saturation Flow Models for Heterogeneous Traffic Condition, *Transportation Research Part A: Policy and Practice*, Elsevier, Vol 118, pp. 38-51.
25. Biswas, S., **Ghosh, I.** (2018). Modeling of the Drivers' Decision-Making Behavior During Yellow Phase. DOI: 10.1007/s12205-018-0666-6, *KSCE Journal of Civil Engineering*, Vol. 22, No. 7, pp. 1-13.
26. Paul, M., and **Ghosh, I.** (2018). A Speed Based Proximal Indicator for Right-Turn Crashes at Unsignalized Intersections in India. DOI: JTEPBS.0000139, *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*, Vol. 144, No. 6.
27. Biswas, S., Chakraborty, S., **Ghosh, I.** and Chandra, S. (2018). Saturation Flow Model for Signalized Intersection under Mixed Traffic Condition. DOI: 10.1177/0361198118777407, *Transportation Research Record: Journal of Transportation Research Board*, Sage Publications.
28. Boora, A., **Ghosh, I.**, Chandra, S. and Rani, K. (2018). Measurement of free-flow conditions on multilane intercity highways under heterogeneous traffic conditions, DOI: 10.17159/2309-8775/2018/v60n1a1, *Journal of the South African Institution of Civil Engineers*, Vol. 60, No. 1.
29. Boora, A., **Ghosh, I.** and Chandra, S. (2018). What Characterises a Vehicle as Follower on Two - Lane Intercity Highways under Heterogeneous Traffic Conditions? DOI: JTEPBS.0000106, *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*, Vol. 144, No. 2.

30. Boora, A., **Ghosh, I.** and Chandra, S. (2017). Clustering Technique: An Analytical Tool in Traffic Engineering to Evaluate the Performance of Two-Lane Highways. *European Transport\Trasporti Europei*, Issue 66, ISTIEE, ISSN 1825-3997.
31. Biswas, S., Chandra, S. and **Ghosh, I.** (2017). Estimation of vehicular speed and Passenger Car Equivalent under mixed traffic condition using Artificial Neural Network, *Arabian Journal for Science and Engineering, Springer*, Vol. 42, No. 9, pp 4099–4110.
32. Saha, A., Chandra, S. and **Ghosh, I.** (2017). Delay at Signalized Intersections Under Mixed Traffic Conditions, DOI: JTEPBS.0000070, *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*, Vol. 143, No. 8.
33. Paul, M., and **Ghosh, I.** (2017). A Novel Approach of Safety Assessment at Uncontrolled Intersections using Proximal Safety Indicators, *European Transport\Trasporti Europei*, Issue 65, ISTIEE, ISSN 1825-3997.
34. Biswas, S., **Ghosh, I.** and Chandra, S. (2017). Influence of Signal Countdown Timer on Efficiency and Safety at Signalized Intersections. *Canadian Journal of Civil Engineering, NRC Research Press*, Vol. 44, No. 2, pp. 308-318.
35. Biswas, S., Chandra, S. and **Ghosh, I.** (2017). Effects of On-Street Parking in Urban Context: A Critical Review. *Transportation in Developing Economies (TiDE)*, Springer, Vol.3, No.1, pp. 1-14.
36. Biswas, S., Chandra, S. and **Ghosh, I.** (2017). Use of Lambert W function in determining speed for macroscopic traffic flow models, *European Transport\Trasporti Europei*, Issue 63, ISTIEE, ISSN 1825-3997.
37. Biswas, S., **Ghosh, I.**, and Chandra, S. (2017). Effect of Traffic Signal Countdown Timers on Pedestrian Crossings at Signalized Intersection. *Journal of Transportation in Developing Economies (TiDE)*, Springer, Vol. 3, No. 2, pp. 1-16.
38. Biswas, S., Chakraborty, S., Chandra, S. and **Ghosh, I.** (2017). Kriging Based Approach for Estimation of Vehicular Speed and Passenger Car Units on an Urban Arterial. DOI: JTEPBS.0000031, *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*, Vol 143, No. 3.
39. Boora, A., **Ghosh, I.** and Chandra, S. (2017). Assessment of Level of Service Measures for Two-Lane Intercity Highways under Heterogeneous Traffic Conditions. *Canadian Journal of Civil Engineering, NRC Research Press*, Vol. 44, No. 2, pp. 69-79.
40. Boora, A., and **Ghosh, I.** (2017). Performance Indicator for Two-Lane Intercity Highways under Heterogeneous Traffic condition, DOI: 10.1016/j.trpro.2017.03.058, *Transportation Research Procedia, Elsevier*, Vol. 22, pp. 459-468.
41. Boora, A., **Ghosh, I.** and Chandra, S. (2017). Identification of Free Flowing Vehicles on Two-Lane Intercity Highways under Heterogeneous Traffic conditions. DOI: 10.1016/j.trpro.2017.03.083, *Transportation Research Procedia, Elsevier*, Vol 21, pp. 130-140.

42. Boora, A., **Ghosh, I.** and Chandra, S. (2016). A Novel Approach for Assessing the LOS for Two-Lane Intercity Highways under Heterogeneous Traffic Conditions. *Journal of Advanced Transportation, John Wiley & Sons, Ltd.*, Vol. 50, No. 8, pp. 2041-2059.
43. Nokandeh, M. M., **Ghosh, I.** and S. Chandra (2016) Determination of Passenger Car Units on Two-Lane Intercity Highways under Heterogeneous Traffic Conditions, DOI: 10.1061/(ASCE)TE.1943-5436.0000809, *Journal of Transportation Engineering, American Society of Civil Engineers (ASCE)*, Vol. 142, No. 2.
44. Penmetsa, P., **Ghosh, I.** and S. Chandra (2015) Evaluation of Performance Measures for Two-Lane Intercity Highways under Mixed Traffic Condition, DOI: 10.1061/(ASCE)TE.1943-5436.0000787, *Journal of Transportation Engineering, American Society of Civil Engineers (ASCE)*, Vol. 141, No. 10.
45. Jeevitha, D., Biswas, S., and **Ghosh, I.** (2015). The Effect of Countdown Timer on the Approach Speed at Signalised Intersections. *Procedia Computer Science, Elsevier*, Vol. 52, pp. 920-925.
46. Mardani, M., Chandra, S., and **Ghosh, I.** (2015). Passenger Car Unit of Vehicles on Undivided Intercity Roads in India, *Procedia Computer Science, Elsevier*, Vol. 52, pp. 926-931.
47. **Ghosh, I.**, Savolainen, P.T. and Gates, T.J. (2014). Examination of Factors Affecting Freeway Incident Clearance Times: A Comparison of the Generalized F Model and Several Alternative Nested Models. *Journal of Advanced Transportation, John Wiley & Sons, Ltd.*, Vol 48, No. 6, pp. 471–485.
48. **Ghosh, I.**, Chandra, S., and Boora, A. (2013). Operational Performance Measures for Two-Lane Roads: An Assessment of Methodological Alternatives. *Procedia-Social and Behavioral Sciences, Elsevier*, Vol. 104, pp. 440-448.
49. **Ghosh, I.** (2012). Examination of Factors Influencing the Clearance Time of Freeway Incidents, *Journal of Transportation Systems Engineering and Information Technology, Elsevier*, Vol. 12, No. 3, pp. 75-89.
50. Savolainen, P.T., Datta, T.K., **Ghosh, I.**, and Gates, T.J. (2010). Effects of Dynamically Activated Emergency Vehicle Warning Sign on Driver Behavior at Urban Intersections, DOI: 10.3141/2149-09, *Transportation Research Record 2149, Journal of the Transportation Research Board*, National Research Council, Washington, D.C., USA, pp. 77-83.
51. Savolainen, P.T. and **Ghosh, I.** (2008). Examination of Factors Affecting Driver Injury Severity in Michigan Single-Vehicle-Deer Crashes, DOI: 10.3141/2078-03, *Transportation Research Record 2078, Journal of the Transportation Research Board*, National Research Council, Washington, D.C., USA, pp. 17-25.

ii. Research publications presented in conferences (Held abroad)

1. Muduli, K., and **Ghosh, I.** (2024) Prediction of Vehicular Yielding Intention While Approaching a Pedestrian Crosswalk. Manuscript Number. TRBAM-24-01890, Presented at the **103rd Annual Meeting of the Transportation Research Board (TRB)**, January 7–11, 2024, Washington D.C., USA, 2024.

2. Sahu, D., Muduli, K., and **Ghosh, I.** (2024) A Copula-Based Approach for Modeling Pedestrian Crash Frequency. Manuscript Number. TRBAM-24-01894, Presented at the **103rd Annual Meeting of the Transportation Research Board (TRB)**, January 7–11, 2024, Washington D.C., USA, 2024.
3. Panwar, A., Muduli, K., Ali, F., and **Ghosh, I.** (2024) A Novel Approach Leveraging Augmented Data and State-of-the-Art Detection Models for Efficient Real-Time Road Surveillance. Manuscript Number. TRBAM-24-05128, Presented at the **103rd Annual Meeting of the Transportation Research Board (TRB)**, January 7–11, 2024, Washington D.C., USA, 2024.
4. Muduli, K., Maurya, A. and **Ghosh, I.** (2024) Understanding Heavy Braking in Vehicles While Approaching Pedestrian Crosswalks: A Survival Analysis Perspective, Manuscript Number. TRBAM-24-05129, Presented at the **103rd Annual Meeting of the Transportation Research Board (TRB)**, January 7–11, 2024, Washington D.C., USA, 2024.
5. Yadav, M. K., **Ghosh, I.**, Sadrani, M., and Antoniou, C. (2024) A Location Allocation Model for the Optimization of Emergency Medical Services in Dehradun. Manuscript Number. TRBAM-24-06204, Presented at the **103rd Annual Meeting of the Transportation Research Board (TRB)**, January 7–11, 2024, Washington D.C., USA, 2024.
6. Banerjee, S., Rastogi, R. and **Ghosh, I.**, (2023) Tourist Evacuation before Cyclone Fani: Challenges faced and roadmap ahead (Paper ID: PP3737), presented at **15th Eastern Asia Society for Transportation Studies (EASTS) Conference 2023**, Kuala Lumpur, Malaysia, September 4-7, 2023.
7. Muduli, K., Sahu, D., and **Ghosh, I.** (2023) A GIS-Based Framework for Identification and Prioritization of Traffic Crash Hotspots (Paper ID: 7522), presented at **World Conference on Transport Research (WCTR) 2023**, 17 - 21 July, 2023, Montréal, Québec, Canada
8. Muduli, K. and **Ghosh, I.** (2023) Prediction of the Future State of Pedestrians While Jaywalking Under Non-lane-based Heterogeneous Traffic Conditions. Manuscript Number. TRBAM-23-02871, Presented at the **102nd Annual Meeting of the Transportation Research Board (TRB)**, January 8–12, 2023, Washington D.C., USA, 2023.
9. Gupta, G., Mahajan, V., **Ghosh, I.** and Antoniou, C. (2023) Evaluating the Safety Effectiveness of Textured Pavement and Speed Hump at Uncontrolled Midblock Crosswalk in Mixed and Heterogeneous Traffic Conditions. Manuscript Number. TRBAM-23-00920, Presented at the **102nd Annual Meeting of the Transportation Research Board (TRB)**, January 8–12, 2023, Washington D.C., USA, 2023.
10. Keshari, S., Thombre, A., and **Ghosh, I.** (2022). A hazard-based approach to model the overtaking duration of motorized two-wheelers on undivided highway in mixed traffic conditions. Presentation Number. TRBAM-22-04579, Presented at the **101th Annual Meeting of the Transportation Research Board (TRB)**, January 9–13, 2022, Washington D.C., USA, 2022.
11. Dhoke, A., Kumar, A., and **Ghosh, I.** (2021). Hazard Based Duration Approach on Pedestrian Crossing Behavior at Signalized Intersections. Manuscript ID: TRBAM-21-04259. Presented

- at the **100th Annual Meeting of the Transportation Research Board (TRB)**, January 24-28, 2021, 2021, Washington D.C., USA, 2021.
12. Paul, M., Chatterjee, S. and **Ghosh, I.** (2020) Development of Conflict Severity Index for Safety Evaluation of Right-Turn Related Crashes at Unsignalized Intersections on Intercity Highways. Paper ID # 20-05211, Presented at the **99th Annual Meeting of the Transportation Research Board (TRB)**, January 12-16, 2020, Washington D.C., USA, 2020.
 13. Paul, M., Kundu., D., and **Ghosh, I.**, 2019. "Development of Crash Prediction Model for Signalized Intersections in India Using Bayesian Inference", Presented at the **13th International Conference of the Eastern Asia Society for Transportation Studies (EASTS)**, Colombo, Sri Lanka, September 9-12, 2019.
 14. Paul, M., and **Ghosh, I.** (2019) Identification of Post Encroachment Time Threshold for Safety Assessment at Unsignalized Intersections Under Heterogeneous Traffic Conditions. Paper ID # 19-03075, Presented at the **98th Annual Meeting of the Transportation Research Board (TRB)**, January 13-17, 2019, Washington D.C., USA, 2019.
 15. Paul, M., Verma, R. and **Ghosh, I.** (2019) An Efficient Calibration Methodology of Microsimulation Model for Signalized Intersections Under Heterogeneous and Indiscipline Traffic Environment. Paper ID # 19-02365, Presented at the **98th Annual Meeting of the Transportation Research Board (TRB)**, January 13-17, 2019, Washington D.C., USA, 2019.
 16. Paul, M., Mukherjee, S. and **Ghosh, I.** (2019) A Novel Approach of Safety Evaluation for Rear-End Crashes at Unsignalized Intersections using Proximal Indicators. Paper ID # 19-01642, Presented at the **98th Annual Meeting of the Transportation Research Board (TRB)**, January 13-17, 2019, Washington D.C., USA, 2019.
 17. Biswas, S., **Ghosh, I.** and Gates, T. (2019) Development of a Methodology for Estimating Start Up Loss Time under Heterogeneous Traffic Condition. Paper ID # 19-06062, Presented at the **98th Annual Meeting of the Transportation Research Board (TRB)**, January 13-17, 2019, Washington D.C., USA, 2019.
 18. Paul, M., and **Ghosh, I.** (2018) Proactive Safety Treatments of Red Light Violations Using Microsimulation Modelling, Paper ID 365881, Presented at the **ASCE International Conference on Transportation & Development (ICTD 2018)**, July 15-18, 2018, Pittsburgh, Pennsylvania, USA.
 19. Paul, M., Rajbongshi, P., and **Ghosh, I.** (2018) Evaluation of Pedestrian Gap Acceptance Behaviour at Uncontrolled Road Sections under Mixed Traffic Condition. Paper ID 379619, Presented at the **ASCE International Conference on Transportation & Development (ICTD 2018)**, July 15-18, 2018, Pittsburgh, Pennsylvania, USA.
 20. Paul, M., **Ghosh, I.**, and Kumar, S. (2018) Influence of Signal Countdown Timers on Pedestrian Movements at Signalized Intersections. Paper ID 365359, Presented at the **ASCE International Conference on Transportation & Development (ICTD 2018)**, July 15-18, 2018, Pittsburgh, Pennsylvania, USA.
 21. Paul, M., Pakhariya, T. and **Ghosh, I.** (2018) Traffic Calming and Management Based Safety Enhancement at Unsignalized Intersection Using Microsimulation. Paper ID 18-02421,

- Presented at the **97th Annual Meeting of the Transportation Research Board (TRB)**, January 7-11, 2018, Washington D.C., USA, 2018.
22. Biswas, S., Chakraborty, S. and **Ghosh, I.** (2018) Saturation Flow Model for Signalized Intersection under Mixed Traffic Condition, Paper ID 18-03975, Presented at the **97th Annual Meeting of the Transportation Research Board (TRB)**, January 7-11, 2018, Washington D.C., USA, 2018.
 23. Saha, A., Chandra, S. and **Ghosh, I.** (2017) Saturation Flow Estimation at Signalized Intersections under Mixed Traffic Conditions, Presented at the **23rd International Conference on Urban Transport and the Environment**, 5-7 September, 2017, Rome, Italy, 2017.
 24. Biswas, S., Chandra, S. and **Ghosh, I.** (2017) Lambert W Function Based Semi-Analytical Framework for Estimation of Speed and Passenger Car Unit, Presented at the **23rd International Conference on Urban Transport and the Environment**, 5-7 September, 2017, Rome, Italy, 2017.
 25. Paul, M., and **Ghosh, I.** (2017) Development of A New Speed Related Proximal Indicator for Safety Assessment at Uncontrolled Intersections. Paper ID 17-06588, Presented at the **96th Annual Meeting of the Transportation Research Board (TRB)**, January 8–12, 2017, Washington D.C., USA, 2017.
 26. Biswas, S., and **Ghosh, I.** (2017) Estimation of The Passenger Car Units and Stream Equivalency Factor at Signalized Intersections under Heterogeneous Traffic Condition. Paper ID 17-06803, Presented at the **96th Annual Meeting of the Transportation Research Board (TRB)**, January 8–12, 2017, Washington D.C., USA, 2017.
 27. Biswas, S., Kumar, S., Pandey, S., Chowdhury, S. and **Ghosh, I.** (2017) Drivers' Decision-Making Behavior during Yellow Phase: A Weighted Average Based Approach. Paper ID 17-04564, Presented at the **96th Annual Meeting of the Transportation Research Board (TRB)**, January 8–12, 2017, Washington D.C., USA, 2017.
 28. Boora, A., **Ghosh, I.** and Chandra, S. (2016) Identification of Free Flowing Vehicles on Two-Lane Intercity Highways under Heterogeneous Traffic conditions. Presented at the **27th Australian Road Research Board (ARRB) Conference**, November 16-18, 2016, Melbourne, Australia, 2016.
 29. Mardani, N., **Ghosh, I.**, and Chandra, S. (2016) Estimation of Capacity of Two-lane Inter-Urban Roads in India from Free Speed data. Presented at the **15th International Conference on Transportation and Traffic Engineering (ICTTE)**, March 1-2, 2016, Tehran, Iran, 2016.
 30. Biswas, S., Ghosh, I. and Chandra, S. (2016) Effect of countdown timers on traffic characteristics and driver behaviors at signalized intersections. Paper ID 16-5771. Presented at the **95th Annual Meeting of the Transportation Research Board (TRB)**, January 10-14, 2016, Washington D.C., USA, 2016.
 31. Ghosh, I., Savolainen, P.T., and M. Duffy, (2012) Analysis of Factors Affecting the Clearance Time of Freeway Incidents. Paper no. 12-0458, Presented at the **91st Annual Meeting of the Transportation Research Board (TRB)**, January 22-26, 2012, Washington D.C., USA, 2012.

32. Savolainen, P.T., Datta, T.K., Gates, T.J., **Ghosh, I.**, Dey, K., and T. Karra (2010) An Assessment of Pilot Pedestrian Enforcement Programs in the City of Detroit, Paper no. 10-2778, Presented at the **89th Annual Meeting of the Transportation Research Board (TRB)**, January 10-14, 2010, Washington D.C., USA, 2010.

iii. Research publications presented in conferences (Held in India)

1. Maji, A., Kummara, P. and **Ghosh, I.** (2024). JATAYU: A Large-Scale Indian UAV Dataset for Vehicle Detection and Tracking, Manuscript ID # 218, **Accepted for presentation at 2024 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT)**, IISc Bangaluru, 12th - 14th July, 2024.
2. Varshney, D., Pal, T. and Ghosh, I. (2024). Detection and Segmentation of Anomalous Traffic Signs Using Yolov8 and Segment Anything Model (SAM) for Indian Specific Conditions, Manuscript ID # 954, **Accepted for presentation at 2024 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT)**, IISc Bangaluru, 12th - 14th July, 2024.
3. Singh, D., Das, P. and **Ghosh, I.** (2024) Driver Behavior Modelling at Unsignalized Intersections under Indian Mixed Traffic Conditions (Submission # 30). Presented at the **1st “Recent Advances in Infrastructure Development” (RAID-2024) conference**, organized by the Department of Civil Engineering, NIT Calicut, Kerala, 12-13 February 2024.
4. Muduli, K., Sahu, V. and **Ghosh, I.** (2024) Predicting Pedestrian Movement in Unsignalized Crossings: A Contextual Cue-Based Approach. DOI: 10.1109/COMSNETS59351.2024.10427345. Presented at **16th International Conference on COMMunication Systems & NETworkS (COMSNETS)**, 3 – 7 January 2024, Bangalore.
5. Agarwal, A., Thombre, A., Kedia, K. and **Ghosh, I.** (2024). ITD: Indian Traffic Dataset for Intelligent Transportation Systems. DOI: 10.1109/COMSNETS59351.2024.10427394. Presented at **16th International Conference on COMMunication Systems & NETworkS (COMSNETS)**, 3 – 7 January 2024, Bangalore.
6. Muduli, K., and **Ghosh, I.** (2024) Identifying Pedestrian-Vehicle Conflicts: An Anomaly-Detection Approach with Traffic Conflict Indicators (Paper ID: 111). presented at **7th Conference of Transportation Research Group (CTRG) of India 2023**, 17-20 December 2023, Surat.
7. Prathyusha, K., Agarwal, A. and **Ghosh, I.** (2023). Sourcing of geometric data for Safety Performance Function: A Review and future directions (Paper ID: 163). presented at **7th Conference of Transportation Research Group (CTRG) of India 2023**, 17-20 December 2023, Surat.
8. Banerjee, S., Rastogi, R. and **Ghosh, I.** (2023). Transportation planning for tourist evacuation: Lessons from two contrasting case studies (Paper ID: 159). presented at **7th Conference of Transportation Research Group (CTRG) of India 2023**, 17-20 December 2023, Surat.

9. Maji, A. and **Ghosh, I.** (2023) A Review of Ten Years of Research on the Safety Perspective of Driving at Roundabouts Paper ID: 124). presented at **7th Conference of Transportation Research Group (CTRG) of India 2023**, 17-20 December 2023, Surat.
10. Banerjee, S., Rastogi, R. and **Ghosh, I.** (2023) Transportation planning for tourist evacuation: Lessons from two contrasting case studies (Paper ID: 159), presented at **7th Conference of Transportation Research Group (CTRG) of India 2023**, 17-20 December 2023, Surat.
11. Singh, D., Das, P., Sharma, B., and **Ghosh, I.** (2023). Safety Assessment at Unsignalized Intersections Using Conflict Technique. Presented at **9th Conference on Transportation Systems Engineering and Management (CTSEM 2023)**, National Institute of Technology, Warangal, Telangana, India, October 12-14, 2023.
12. Banerjee, S., **Ghosh, I.** and Rastogi, R., (2023) Evacuation of the Transient Population: Review of the Behavioural Aspects and Challenges. In **Fifth World Congress on Disaster Management: Volume IV** (Chapter 21, pp. 187-197), DOI: 10.4324/9781003341970, Routledge.
13. Singh, D., Das, P. and **Ghosh, I.** (2022). A Review on Surrogate Safety Measure using Extreme Value Theory. Presented at **the 14th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)**, 19-21 December 2022, Mumbai.
14. Boora, A., **Ghosh, I.**, Chandra, S. and Rani, K. (2021). Examination of Platooning Variables on Two-Lane Highways Having Mixed Traffic Situation, **Select Proceedings of ICCME 2020**, Advances in Construction Materials and Sustainable Environment, pp. 95-110.
15. Paul, M. and **Ghosh, I.** (2020). Understanding the Drivers' Perception of Traffic Signal Countdown Timers. Presented at the **13th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)**, 10 and 11 December 2020, Mumbai.
16. Kumar, A., Dhoke, A. and **Ghosh, I.** (2020). Modelling Waiting Duration of Pedestrians at Signalized Intersection: A Hazard Based Duration Approach. Presented at the **13th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)**, 10 and 11 December 2020, Mumbai.
17. Akhtar, S. and **Ghosh, I.** (2020) Adoption of electric vehicles: A systematic review. Presented at the **13th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)**, 10 and 11 December 2020, Mumbai.
18. Singh, S. and **Ghosh, I.** (2020) A Review of Factors affecting Cyclone Evacuation. Presented at the **13th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)**, 10 and 11 December 2020, Mumbai.
19. Kilaru, Y. and **Ghosh, I.** (2020) Traffic event description based on Twitter data using Unsupervised Learning Methods for Indian road conditions. Presented at the **13th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)**, 10 and 11 December 2020, Mumbai.

20. Shirzai, N. and **Ghosh, I.** (2020) Review of Studies on Crash Mitigation Measures at Signalized Intersections. Presented at the **13th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)**, 10 and 11 December 2020, Mumbai.
21. Prajapati, A. K., Gora, A., Agarwal, A., and **Ghosh, I.** (2020) Use of Computer Vision to Automatize Traffic Data Collection under Mixed Traffic Condition. Presented at the **2nd ASCE India Conference on Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies**, 02-04 March, 2020, Kolkata, India
22. Thombre, A., **Ghosh, I.** and Agarwal, A. (2020) Examining road safety compliance among motorised two wheelers in Delhi - A cross-sectional study. Presented at the **2nd ASCE India Conference on Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies**, 02-04 March, 2020, Kolkata, India
23. Biswas, S., **Ghosh, I.** and Chandra, S. (2018) Conceptual Method for Computing Stream Equivalency Factor at Signalized Intersections under Mixed Traffic Condition. Paper no. 15, *Presented at the 3rd Conference of Recent Advances in Traffic Engineering (RATE 2018)*, NIT Surat, 11-12 August, 2018.
24. Biswas, S., **Ghosh, I.** and Chandra, S. (2018) Conceptual Method for Estimating Start Up Loss Time under Heterogeneous Traffic Condition. Paper no. 63, *Presented at the 3rd Conference of Recent Advances in Traffic Engineering (RATE 2018)*, NIT Surat, 11-12 August, 2018.
25. Mittal, A., Gupta, M. and **Ghosh, I.** (2017) Data Extraction from Traffic Videos Using Machine Learning Approach, *Proceedings of Advances in Intelligent Systems and Computing, Springer, 7th International Conference on Soft Computing for Problem Solving - SocProS 2017*, IIT Bhubaneswar, Bhubaneswar, December 23-24, 2017.
26. Paul, M., Chaudhary, V. and **Ghosh, I.** (2017) A Novel Approach of Safety Evaluation for Red Light Violation Related Crashes at Signalized Intersections. Paper ID 0078_0116_000465, *Presented at the ASCE India Conference: Urbanization Challenges in Emerging Economies - Moving Towards Resilient Sustainable Cities and Infrastructure*, IIT Delhi, India, December 12-14, 2017.
27. Paul, M., Charan, V., Soni, V. and **Ghosh, I.** (2017) Calibration of Microsimulation Model for Unsignalized Intersection under Heterogeneous Traffic Conditions. Paper ID 0078_0116_000444, *Presented at the ASCE India Conference: Urbanization Challenges in Emerging Economies - Moving Towards Resilient Sustainable Cities and Infrastructure*, IIT Delhi, India, December 12-14, 2017.
28. Saha, A, Jain, A., Chandra, S., and Ghosh, I. (2017) Effect of Traffic Composition on Delay and Saturation Flow at Signal Controlled Intersections. *Presented at the 4th Conference of Transportation Research Group of India (4th CTRG)*, IIT Bombay, Mumbai, India, December 17-20, 2017.
29. Paul, M. and **Ghosh, I.** (2017) Safety Assessment at Unsignalized Intersection using Post Encroachment Time's Threshold – A Sustainable Solution for Developing Countries, Paper ID

- P27, *Presented at the National Conference on Road and Traffic (NCORT- 2017)*, IIT Roorkee, India, October 14-15, 2017.
30. Saha, A., Chandra, S. and **Ghosh, I.** (2017) Relationship between Control Delay and Stopped Delay at Signalized Intersection under Mixed Traffic Conditions, Paper ID P28, *Presented at the National Conference on Road and Traffic (NCORT- 2017)*, IIT Roorkee, India, October 14-15, 2017.
31. Biswas, S., Chakraborty, S., Chowdhury, R. and **Ghosh, I.** (2016) Hydro-Electric Flow Optimization of a Dam: A Kriging Based Approach. Paper No - 229, *Presented at the 10th Structural Engineering Convention (SEC) 2016*, CSIR- Structural Engineering Research Centre, Chennai, India, December 21-23, 2016.
32. Biswas, S., Maurya, S., **Ghosh, I.** and Chandra, S. (2016) Modeling of Individual Vehicle Speed On Urban Arterials Using Artificial Neural Network, Paper No - 41, *Presented at the 12th Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)*, IIT Bombay, India, December 19-21, 2016.
33. Saha, A., Chandra, S. and **Ghosh, I.** (2016) A Comparison of Delay Based at Signal Controlled Intersections Based on Different Methods, Paper No- 155, *Presented at the 12th Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)*, IIT Bombay, India, December 19-21, 2016.
34. Boora, A., Rani, K. and **Ghosh, I.** (2016) Identification of Free Moving Vehicles on Single Lane Rural Roads under Heterogeneous Traffic Condition. Paper ID # H-2, *Presented at the National Conference on fifteen years of PMGSY*, IIT Roorkee, India, August 6-7, 2016,
35. Biswas, S., **Ghosh, I.** and Chandra, S. (2015) Effect of Traffic Signal Countdown Timers On Pedestrian Crossings at Signalized Intersection. *Presented at the 3rd Conference of Transportation Research Group of India (3rd CTRG)*, Kolkata, India, December 17-20, 2015.
36. Biswas, S., **Ghosh, I.**, Chandra, S. and Singh, J. (2015) Comparison of Passenger Car Unit Values for Urban Mixed Traffic at Signalized Intersections. *Presented at the 3rd Conference of Transportation Research Group of India (3rd CTRG)*, Kolkata, India, December 17-20, 2015.
37. **Ghosh, I.**, and Grillo, L. (2011) Child Restraint Device Usage in the State of Michigan. Paper no. 20, *Presented at the 1st Conference of Transportation Research Group of India (1st CTRG)*, Bangalore, December 2011.
38. **Ghosh, I.**, and Savolainen, P.T. (2011) Investigation of Emergency Vehicle Crashes in the State of Michigan. Paper no. 30, *Presented at the 1st Conference of Transportation Research Group of India (1st CTRG)*, Bangalore, December 2011.
39. **Ghosh, I.**, and Savolainen, P.T. (2011) Analysis of Factors Affecting the Incident Clearance Time for Freeway Courtesy Patrol Operations, Paper no. 39, *Presented at the 1st Conference of Transportation Research Group of India (1st CTRG)*, Bangalore, December 2011.
40. **Ghosh, I.**, and Savolainen, P.T. (2011) Analysis of Risks Associated with Alternate Truck Routes on Two-Lane Highways, Paper no. 89, *Presented at the 1st Conference of Transportation Research Group of India (1st CTRG)*, Bangalore, December 2011.

41. Roy, S. K., Bhattacharya, G., and **Ghosh, I.** (2005) Application of Reliability Analysis in Pavement Performance Studies. *Proceedings of the International Conference on Structural and Road Transportation Engineering (START 2005)*, ISSN/ISBN: 81-88901-14-8, pp. 482-488, IIT Kharagpur, India, January 2005.
42. **Ghosh, I.** (2005) Reliability Analysis of Pavements - State of the Art. *Proceedings of All India Science, Technology and Engineering Students Academic Meet 2005*, pp. 84-89, Bengal Engineering and Science University, Shibpur, Howrah, India, January 2005.

iii. Technical Reports of Sponsored Projects

1. **Ghosh, I.** (2016) Effect of Countdown Display on Traffic Flow Characteristics and Driver Behaviour at Signalised Intersections. *Final Report, Project no. SB/FTP/ETA-438/2012, Department of Science and Technology (DST)*, New Delhi, India.
2. **Ghosh, I.** (2016) Development of Performance Parameters for Two-Lane Roads under Mixed Traffic Condition, Final Report, *Project no. FIG-100583-CED/13*, Sponsored Research & Industrial Consultancy, IIT Roorkee, December/2016.
3. Savolainen, P.T. and **I. Ghosh** (2011). Investigation of Freeway Operations in Metro Detroit, *NEXTRANS Project No. 074WY03. USDOT Region V Regional University Transportation Center, Nextrans - Discovery Park at Purdue University*.
4. Savolainen, P.T. and **I. Ghosh** (2010). Using Detector Data to Identify and Examine Crashes and Incidents on Freeways, *NEXTRANS Project No. 051WY02, USDOT Region V Regional University Transportation Center, Nextrans - Discovery Park at Purdue University* (Cited by 6).
5. Savolainen, P.T., Dey, K., **Ghosh, I.**, A. Lamb, (2009). Investigation of Emergency Vehicle Crashes in the State of Michigan, *NEXTRANS Project No. 015WY01, USDOT Region V Regional University Transportation Center, Nextrans - Discovery Park at Purdue University* (Cited by 12).

14. Books

S. No	Title	Author's Name	Publisher	Year of Publication
1	Advances in Transportation Engineering: Select Proceedings of TRACE 2018 (Lecture Notes in Civil Engineering Book 34)	Srinivas Pulugurtha, Indrajit Ghosh , Sabyasachi Biswas	Springer	2019
2	Fundamentals of Transportation Systems: Highways, Railways, Airways and. Waterways	Ashoke Kumar Sarkar, Shrinwas Arkatkar, Vinayak Rao, Indrajit Ghosh	Central Board of Secondary Education (CBSE), New Delhi.	2013

15. Any other Information

A. Resource Person/Expert for the Workshops/Short-term courses/Conferences:

- a. **Invited Speaker** on “**Crossing with Care: Pathways to Enhancing Pedestrian Safety**” during the workshop on “**AI-enabled Solutions for Smart Road Infrastructure Management**” organized by **Department of Computer Science and Information Systems, and Department of Civil Engineering, BITS Pilani, Pilani, Rajasthan** (March 16, 2024).
- b. **Invited talk** on “**Jaywalking: How to prevent them on urban roads?**” at the Short-Term Training Program on “**Recent Developments and Advancements in Transportation Engineering (RDATE 2023)**”, Centre for Transportation Research (CTR), Civil Engineering Department, **NIT Calicut, Kozhikode, Kerala** (March 13-18, 2023)
- c. **Invited Lecture** on “**Unsafe pedestrian crossings: challenges and future direction for smart city environment**” at the Conference of **Infrastructure and Built Environment: Towards Sustainable and Resilient Societies (ISBR 2023)**, **IIT Kharagpur, West Bengal** (February 2 – 4, 2023)
- d. **Expert talks** on “**Types of intersections**” and “**Design of rotary intersection**” at **Uttarakhand Technical University, Dehradun, Uttarakhand** (June 25 and July 23, 2021)
- e. **Expert talks** on “**Types of intersections**” and “**Design of rotary intersection**” at **Uttarakhand Technical University, Dehradun, Uttarakhand** (June 25 and July 23, 2021)
- f. **Expert talk** on “**Traffic safety improvements on rural roads**” at **VNIT Nagpur, Maharashtra** (October 29, 2020)
- g. **Expert talk** on “**Proactive Analysis to Improve Road Safety on Indian Roads**” at **Rajasthan Technical University, Kota, Rajasthan** (August 29, 2020)
- h. **Expert talk** on “**Surrogate safety measures for traffic safety assessment under heterogeneous traffic conditions**” at **NIT Silchar, Assam** (July 29, 2020)
- i. **Expert talk** on “**Road Traffic Safety**” at **NIT Uttarakhand, Srinagar, Uttarakhand** (November 20, 2017).
- j. **Expert talks** at TEQIP Sponsored two-day workshop on “**Emerging Trends in Road Safety Research & Management**” at **NIT Patna, Bihar** (February 19-20, 2016)
- k. **Expert talks** at TEQIP Sponsored three-day workshop on “**Mitigation of Road Disasters**” at **NIT Karnataka, Surathkal, Karnataka** (September 15-17, 2014)
- l. **Expert talks** at National Rural Roads Development Authority (NRRDA) sponsored research project entitled “**Impact of PMGSY Roads on Accessibility in Rural Areas**” at **BITS Pilani, Pilani, Rajasthan** (September 5-6, 2014)

B. Ph.D. /M.Tech. thesis examiner for the following institutes:

- a. **NIT Warangal** (January 2023)
- b. **NIT Hamirpur, Himachal Pradesh** (January 2023, September 2018 & August 2015)
- c. **School of Planning and Architecture (SPA), New Delhi** (April 2022)

- d. **NIT Trichy** (October 2021)
- e. **IIT Bombay** (March 2021, February 2024)
- f. **IIT Delhi** (January 2021)
- g. **NIT Surat, Gujarat** (October 2020 & August 2016)
- h. **QUT Australia** (October 2019)

C. Organization of Short-term course/Conference/training programs

Short-term courses

- **Coordinator for Road Safety Auditors Certification course** at IIT Roorkee in collaboration with the **Ministry of Road Transport and Highways (MoRTH)** and **Indian Roads Congress (IRC)** held between 20th February and 6th March 2023.
- **Coordinator for Road Safety Auditors Certification course** at IIT Roorkee in collaboration with the **Ministry of Road Transport and Highways (MoRTH)** and **Indian Roads Congress (IRC)** held between 22nd February and 8th March 2021
- Organized a 2-credit research-based practical course on “**Road Traffic Safety**” under MHRD Scheme on **Global Initiative on Academic Network (GIAN)** Phase II (Guest Faculty: **Prof. Peter Savolainen, Foundation Professor, Michigan State University, East Lansing, USA**)
- **AICTE sponsored** Short-term course “**Modelling with Transportation Data (MTD)**” along with Prof. Rajat Rastogi, Department of Civil Engineering, IIT Roorkee, June 8 - 12, 2015.
- **Joint Program Coordinator** for the Brainstorming Session on “Landslide Problems in Himachal Pradesh”, on April 27-28, 2012, being conducted by Civil Engineering Department, NIT Hamirpur

Conferences

- **Organizing Secretary** for the **2nd International Conference on Transportation Infrastructure Projects: Conception to Execution**, IIT Roorkee, September 14-17, 2022.
- **Organizing Secretary** for the **International Conference “Transportation Infrastructure Projects: Conception to Execution”**, IIT Roorkee, January 7-10, 2019.
- **Organizing Committee Member** of the **National Conference on Road and Traffic (NCORT- 2017)**, IIT Roorkee, October 14-15, 2017.
- **Organizing Committee Member** of the **8th Task Force Committee Meeting** of ‘**Development of Indian Highway Capacity Manual (Indo-HCM)**’, Sponsored by CSIR-CRRI, held at IIT Roorkee, September 9-10, 2016.
- **Organizing Committee Member** of **National Conference on Fifteen Years of PMGSY (FYPMGSY)**, Sponsored by NRRDA, Ministry of Rural Development, GOI, held at IIT Roorkee, August 6-7, 2016.

- **Organizing Committee Member** of the **Indian Geotechnical Conference (IGC)**, Sponsored by CSIR CBRI & IIT Roorkee, held at IIT Roorkee, December 22-24, 2013.

Delivered lectures

- **QIP/TEQIP** sponsored Short-term Courses
- **PMGSY** Training programmes sponsored by NRRDA
- **Capacity Building for Urban Local Bodies (CBUD)** project sponsored by the Government of India

D. Institute/Department-Level Services

- Chairman, **Institute Road Safety Task Force**, IIT Roorkee, 2021 – To date;
- Member, **Senate's Committee for Scholarships and Prizes (SCSP)**, IIT Roorkee, 2021 – 2023;
- Chairperson, **School Research Committee, Mehta Family School of Data Science and Artificial Intelligence**, IIT Roorkee, 2021 – To date;
- Coordinator, **Transportation Engineering Group**, Department of Civil Engineering, IIT Roorkee, 2022 - To date
- Member, **Ranking Analytics Committee**, IIT Roorkee, 2017 –2019;
- Member, Guidelines for **SPARK (IIT Roorkee Internship) Program**, IIT Roorkee, 2017
- **Staff Advisor (Yoga)**, Institute Sports Council, IIT Roorkee, 2013-16
- **Staff Advisor (Taekwondo)**, Institute Sports Council, IIT Roorkee, 2013-16
- Convenor, **Departmental Faculty Search Committee**, Department of Civil Engineering, IIT Roorkee, 2015- 2019
- Member, **Departmental Research Committee**, Department of Civil Engineering, IIT Roorkee, 2018 –2020
- Member, **Departmental Time Table Committee**, Department of Civil Engineering, IIT Roorkee, 2014-16 and 2020-2022
- Member, **Departmental Office Establishment Committee**, Department of Civil Engineering, IIT Roorkee, 2018 –2020
- Member, **Departmental Training, Tour and Placement Committee**, Department of Civil Engineering, IIT Roorkee, 2016 –2018
- Member, **Departmental Academic Program Committee**, Department of Civil Engineering, IIT Roorkee, 2014-16 and 2020-2022
- Member, **Departmental Administrative Committee**, Department of Civil Engineering, IIT Roorkee, 2013-16 and 2020 – To date
- Member, **Web Management Committee**, Department of Civil Engineering, IIT Roorkee, 2017 – 2019

E. Miscellaneous

- **Developed course material for M. Tech. + Ph.D. level course on 'Road Traffic Safety'** under New Scheme 2014.

- Arranged several **Guest Lectures** on the start-of-the-art **research topics**:
 - “Intelligent Transportation Systems (ITS) for India: Sensors, Data, Models, and Applications” [Speaker: **Prof. Gitakrishnan Ramadurai**, Associate Professor, Department of Civil Engineering, **IIT Madras**, India at IIT Roorkee on March 14, 2016.
 - “Road Safety Audit” [Speaker: **Dr. S Velmurugan**, Senior Principal Scientist, Traffic Engineering and Safety Division, **CSIR-Central Road Research Institute (CRRI)**, New Delhi] at IIT Roorkee on November 25, 2017.
 - “Application of Virtual Reality to analyze pedestrian behaviour on mid-block crosswalk” [Speaker: **Dr. Anurag Pande**, Professor, Department of Civil Engineering, **California Polytechnic State University (Cal Poly)**, USA] at IIT Roorkee on February 10, 2018.
 - “Behavioural Analysis of Mixed Traffic Stream: An Inside Story” [Speaker: **Prof. Akhilesh Kumar Maurya**, Professor, Department of Civil Engineering, **IIT Guwahati**, ASSAM] at IIT Roorkee on August 7, 2018
- Serving as a **Reviewer** for several **top notch Journals** in the **Transportation Engineering** field namely
 - Accident Analysis & Prevention, Elsevier
 - Safety Science, Elsevier
 - Journal of Safety Research, Elsevier
 - IEEE Transactions on Intelligent Transportation Systems
 - Transportation Research Record, SAGE Publications Inc.
 - Transportation Research Part A: Policy and Practice
 - Transportation Research Part F: Traffic Psychology and Behaviour
 - Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)
 - Transportation Letters, Taylor & Francis