

# INDRAJIT GHOSH

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 Civil Engineering Department,  
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## PERMANENT ADDRESS:

House name *Basundhara*  
 C/o, Mr. Samir Kumar Ghosh  
 Malancho, G.T. Road, DVC More,  
 Khudiram Pally, P.O. Sripally  
 Burdwan-713103, West Bengal, India.

## RESEARCH INTERESTS

Road Safety using Traffic Conflict Technique, Motorists, Pedestrians; Traffic Operations, Signalised & Unsignalised Intersections, Two-lane and Multi-lane Highways, Level-of-Service; Driver Behaviour at Signal Controlled Intersections, Dilemma Zone, Signal Countdown Timers

## PERSONAL INFORMATION

- **Date of birth:** December 27, 1979
- **Marital Status:** Married
- **Place of Birth:** Burdwan, West Bengal, India
- **Nationality:** Indian
- **Languages Known:** English, Bengali, Hindi

## EDUCATION

**Doctor of Philosophy, Civil Engineering** Graduation: Dec 2010  
 Major: Transportation Engineering GPA – 3.93 / 4.0  
 Wayne State University, Detroit, Michigan, USA  
 Dissertation: Examination of Factors Affecting the Frequency, Response Time, and Clearance Time of Incidents on Freeways  
 Advisor: Dr. Peter Tarmo Savolainen, Associate Professor, Iowa State University (<https://www.ccee.iastate.edu/pts/>)

**Master of Science, Civil Engineering** Graduation: May 2008  
 Major: Transportation Engineering GPA – 3.93 / 4.0  
 Wayne State University, Detroit, Michigan, USA

**Master of Engineering, Civil Engineering** Graduation: Jul 2005  
 Major: Highway & Traffic Engineering Percentage – 79.6 Percent  
 Bengal Engineering and Science University, Shibpur, India.  
 Thesis: Reliability Analysis of Pavements Designed by Mechanistic-Empirical (M-E) Approach  
 Advisors: Dr. Gautam Bhattacharya and Dr. Sudip Kumar Roy

**Bachelor of Engineering, Civil Engineering** Graduation: May 2003  
 Bengal Engineering College (A Deemed University), Shibpur, India. Percentage – 73.6 Percent

## TEACHING RELATED EXPERIENCE

- A. Instructor-in-charge at IIT Roorkee, Roorkee, Uttarakhand, India** July 2012-To date
- *Road Traffic Safety (CEN 665- Postgraduate Level)*
- B. Co-Instructor at IIT Roorkee, Roorkee, Uttarakhand, India** July 2012-To date
- *Transportation Engineering I (CE 362- Undergraduate Level)*
  - *Transportation Engineering II (CE 461- Undergraduate Level)*
  - *Highway and Traffic Engineering (CEN 210- Undergraduate Level)*
  - *Railway Engineering and Airport Planning (CEN 307- Undergraduate Level)*

- *Traffic Engineering and Management (CE 462- Undergraduate Level)*
- C. Instructor-in-charge at NIT Hamirpur, Himachal Pradesh, India** Feb 2012-July 2012
  - *Construction Technology (CE 243 - Undergraduate Level)*
  - *Optimization Techniques (CE 245 - Undergraduate Level)*
- D. Instructor-in-charge at BITS Pilani, Pilani, Rajasthan, India** Aug 2011-Feb 2012
  - *Highway Geometric Design (CE G535 - Postgraduate Level)*
  - *Introduction to Discrete Choice Theory (CE G539 - Postgraduate Level)*
  - *Pavement Analysis and Design (CE G518 - Postgraduate Level)*
- E. Co-instructor at BITS Pilani, Pilani, Rajasthan, India** Aug 2011- Feb 2012
  - *Engineering Graphics: Tutorial and Practical (BITS F110 - Undergraduate Level)*
  - *Transportation Engineering I (CE C391 - Undergraduate Level)*
- F. Graduate Teaching Assistant at Wayne State University, Detroit, Michigan, USA**
  - *Transportation Design (CE 4640 - Undergraduate Level)* Fall 2009, Fall 2010
    - Prepared presentation slides
    - Prepared in-class example problems, their solutions and homework assignments
    - Graded homework assignments, exams
    - Assisted students with course projects, guided in the field data collection procedure
    - Assisted students with analytical methods in transportation design
    - Tutored students with use of software program HCS
  - *Transportation Engineering (CE 4600-Undergraduate Level)* Winter 2009, Winter 2010
    - Graded homework assignments, quizzes and exams
    - Assisted students with course projects
  - *Economic Analysis in Transportation Systems (CE 7640-Graduate Level)* Winter 2009, Fall 2010
    - Prepared presentation slides
    - Prepared in-class example problems, their solutions and homework assignments
    - Graded homework assignments, exams
    - Assisted students with course projects, guided in the field data collection procedure
  - *Highway Safety & Risk Management (CE 7600-Graduate Level)* Winter 2010
    - Prepared presentation slides
    - Prepared in-class example problems, their solutions and homework assignments
    - Graded homework assignments, exams
    - Assisted students with course projects, guided in the field data collection procedure
  - *Advanced Traffic Signal Systems (CE 7670--Graduate Level)* Fall 2009
    - Prepared presentation slides
    - Prepared in-class example problems, their solutions and homework assignments
    - Graded homework assignments, exams
    - Assisted students with course projects and in the laboratory-based classes
    - Assisted students with analytical methods in traffic signal design
    - Assisted students with the use of software program Synchro, SimTraffic, and PASSER

## **RESEARCH EXPERIENCE**

### **A. Research Projects**

#### As PI

- Effect of Countdown Display on Traffic Flow Characteristics and Driver Behaviour at Signalised Intersections, Department of Science and Technology (DST), New Delhi, India (16.25 lakhs).
- Development of performance parameters for two-lane roads under mixed traffic condition, Faculty Initiation Grant (FIG) Scheme A, IIT Roorkee (9.5 lakhs).

Others relevant experiences

- Modeling Modal Shift from other Vehicle Users to Bus on Introduction of Bus Rapid Transit System (BRTS) in Jaipur, Jaipur Development Authority (JDA) and BITS Pilani, November 2011-February 2011.
- Implementing Advanced Traveller Information System (ATIS) for Indian Cities, Transportation Engineering Division, Indian Institute of Technology Madras, Ministry of Communication and Information Technology, Government of India, February 2011- July 2011.
- Investigation of Freeway Operations in Metro Detroit, NEXTRANS USDOT Region V Regional University Transportation Center (UTC), Purdue University, August 2010 – December 2010.
- Using Detector Data to Identify and Examine Crashes and Incidents on Freeways, NEXTRANS USDOT Region V Regional University Transportation Center (UTC), Purdue University, August 2009 - August 2010.
- Anthony Wayne Drive Streetscape Project, Detroit Department of Transportation, May 2009-December 2010.
- 2009 Direct Observation Surveys of Child Restraint Device Use and Misuse, Michigan Office of Highway Safety Planning (OHSP), October 2008 - September 2009.
- 2009 Direct Observation Surveys of Booster Seat Use, Michigan Office of Highway Safety Planning (OHSP), October 2008 - September 2009.
- 2009 Direct Observation Surveys of Safety Belt Use, Michigan Office of Highway Safety Planning (OHSP), October 2008 - September 2009.
- Development of Guidelines for Utility Work Zones, Federal Highway Administration (FHWA), August 2008 - August 2009.
- Investigation of Emergency Vehicle Crashes in the State of Michigan, NEXTRANS USDOT Region V Regional University Transportation Center (UTC), Purdue University, February 2008 - February 2009.
- Developing a Vehicle Infrastructure Integration (VII) Course, Michigan Ohio (MIOH) University Transportation Center (UTC), January 2008 - August 2008.
- Education and Enforcement in Focus State and Focus City Pedestrian Safety Efforts, National Highway Traffic Safety Administration (NHTSA), October 2007 - September 2009.
- 2008 Direct Observation Surveys of Safety Belt Use, Michigan Office of Highway Safety Planning (OHSP), October 2007 - September 2008.
- Evaluation of Innovative Emergency Vehicle Alert System, E-Light, LLC, April 2007 - December 2010.
- Safety and Operational Study for Metropolitan Planning Organizations (MPO) within Michigan, Michigan Office of Highway Safety Planning (OHSP), (Kalamazoo County, Muskegon County, Eaton-Clinton-Ingham Tri-County, Jackson County and Washtenaw County), August 2006 - December 2010.
- Evaluation of Pedestrian Safety in the City of Detroit, August 2006 - December 2010.

**B. Graduate Projects/Term Papers:**

- Examination of Factors Affecting the Multiple-vehicle Crashes in Michigan
- Analyzing the Effectiveness of an Emergency Vehicle Alert System (EVAS)
- Optimize Progression on a Three Arterial Network in Downtown Detroit
- Optimization of a Pavement Network System in the State of Michigan
- Economic Evaluations and the Preferred Alternatives for Full Road Closure on Freeways: A Case Study of Interstate-75 Closure during the Ambassador Bridge Gateway Project
- Dodge the Lodge II Economic Analysis
- Design of a Two-Lane Roadway Segment Along with Base Cut/Fill Quantities on Centerline Elevations
- Estimating Delay at Roundabouts Using Queuing Models
- Modeling and Analyzing Vehicular Traffic Flow Using Various Queuing Models

- Traffic Impact Study for a Health Care Facility in Canton Township, Michigan
- Application of Confirmatory Factor Analysis Using LISREL 8 and AMOS 17: A Case Study of Deer-Vehicle Crashes in the state of Michigan

### C. Working Knowledge

- Detroit Metropolitan Area Sensor Database
- Southeast Michigan Freeway Courtesy Patrol Database
- Southeast Michigan Dynamic Message Sign Database
- Michigan and North Carolina Traffic Crash Database
- Highway Safety Manual, 2010 Edition
- Highway Capacity Manual (HCM), 2010 Edition
- Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition
- Institute of Transportation Engineers (ITE) Trip Generation Manual, 8<sup>th</sup> Edition
- Highway Safety Design and Operations Guide, 3<sup>rd</sup> Edition (AASHTO Yellow Book)
- A Policy on Geometric Design of Highways and Streets, 6<sup>th</sup> Edition (AASHTO Green Book)
- A Manual of User Benefit Analysis for Highways, 2<sup>nd</sup> Edition (AASHTO Red Book)
- Roadside Design Guide, 3<sup>rd</sup> Edition

## PROFESSIONAL EXPERIENCE

### A. Academia

- **Assistant Professor** Jul 2012-To date  
Civil Engineering Department, Indian Institute of Technology Roorkee  
[Currently teaching two undergraduate level courses, namely, Highway and Traffic Engineering (CEN 210) and Railway Engineering and Airport Planning (CEN 307) and one PG course on Road Traffic Safety (CEN 665) along with carrying out research studies]
- **Assistant Professor** Feb 2012-Jul 2012  
Civil Engineering Department, National Institute of Technology, Hamirpur  
[Taught two undergraduate level courses, namely, Construction Technology (CE 243) and Optimization Techniques (CE 245) as instructor-in-charge]
- **Visiting Faculty** Jul 2011-Feb 2012  
Civil Engineering Department, Birla Institute of Technology and Science (BITS) Pilani  
[Taught three masters and two undergraduate level courses, namely, Highway Geometric Design (CE G535), Introduction to Discrete Choice Theory (CE G539), Pavement Analysis and Design (CE G518), Transportation Engineering I (CE C391), and Engineering Graphics: Tutorial and Practical (BITS F110) along with conducting research studies]
- **Senior Project Officer** Feb 2011-Jul 2011  
Transportation Engineering Division, Indian Institute of Technology Madras, Chennai  
[Worked as a senior project officer for the project titled "IMPLEMENTATION OF ADVANCED TRAVELLER INFORMATION SYSTEM (ATIS) FOR INDIAN CITIES" conducted by Indian Institute of Technology Madras with the sponsorship from Department of Communication and Information Technology, Govt. of India. Organized and scheduled data collection, analyzed the collected data, interacted with faculty, project staff, students, as well as local authorities in ensuring execution of the project]
- **Graduate Teaching Assistant** Jan 2009 – Dec 2010  
Civil & Environmental Engineering Dept., Wayne State University  
[Worked as a Graduate Teaching Assistant for several UG, PG ad PhD level courses, namely, Transportation Engineering (CE 4600), Transportation Design (CE 4640), Economic Analysis in Transportation Systems (CE 7640), Highway Safety & Risk Management (CE 7600) and Advanced Traffic Signal Systems (CE 7670) course]
- **Graduate Research Assistant** Aug 2006 –Dec 2008  
Wayne State University Transportation Research Group  
[Worked with numerous Transportation/Traffic Engineering and Highway Safety related projects and was involved in the preparation of various project proposals and report writing especially those described in Research Projects Section]

**B. Industry**

- **Supervising Engineer** Aug 2005 – Jul 2006  
M/s. Ghosh & Sons, Burdwan, West Bengal, India  
[Worked in various Highway Construction sites, Housing Development projects, as well as in the Construction site of Residential hostels of Burdwan Medical College and Hospital, Burdwan, West Bengal, India.]
- **Vocational Trainee** Jun 2002 – Jul 2002  
Public Works (Roads) Department, Govt. of West Bengal, W.B., India  
[Was involved in the design of the bridge over River Mahananda at Madhabpurghat on Itahar-Churamon-Kharba Road, Uttar Dinajpur, West Bengal and the bridge over River Banshi at 14<sup>th</sup> Mile of Hatigoria-Kultikhari-Rohini-Rogra Road, Purba Medinipur, West Bengal, India]

**PUBLICATIONS AND PRESENTATIONS****A. Published/Accepted Papers in International Journals**

1. Boora, A., **Ghosh, I.** and Chandra, S. (2017). A Novel Approach for Assessing the LOS for Two-Lane Intercity Highways under Heterogeneous Traffic Conditions. *Journal of Advanced Transportation*, John Wiley & Sons, Ltd., DOI: 10.1002/atr.1444.
2. 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, 44(2), pp. 69-79, DOI: 10.1139/cjce-2016-0275.
3. 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, DOI: 10.1139/cjce-2016-0267.
4. Saha, A., Chandra, S. and **Ghosh, I.** (2017). Study of Delay at Signalized Intersections Under Mixed Traffic Conditions, Manuscript No. TEENG-4178, *Accepted for Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*.
5. Biswas, S., **Ghosh, I.**, and Chandra, S. (2017). Effect of Traffic Signal Countdown Timers on Pedestrian Crossings at Signalized Intersection. DOI:10.1007/s40890-016-0032-7, *Journal of Transportation in Developing Economies (TIDE)*, 3(2), Springer.
6. 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. *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*, 143(3), DOI: 10.1061/JTEPBS.0000031.
7. Nokandeh, M. M., **Ghosh, I.** and S. Chandra (2016) Determination of Passenger Car Units on Two-Lane Intercity Highways under Heterogeneous Traffic Conditions, *Journal of Transportation Engineering, American Society of Civil Engineers (ASCE)*, 142(2), DOI: 10.1061/(ASCE)TE.1943-5436.0000809.
8. Penmetsa, P., **Ghosh, I.** and Chandra, S. (2015), Evaluation of Performance Measures for Two-Lane Intercity Highways under Mixed Traffic Condition. *Journal of Transportation Engineering, American Society of Civil Engineers (ASCE)*, 141(10), DOI: 10.1061/(ASCE)TE.1943-5436.0000787.
9. **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.
10. **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. 75-99.
11. 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, *Transportation Research Record 2149, Journal of the Transportation Research Board*, National Research Council, Washington, D.C., USA, pp. 77-83.
12. Savolainen, P.T. and **Ghosh, I.** (2008). Examination of Factors Affecting Driver Injury Severity in Michigan Single-Vehicle-Deer Crashes, *Transportation Research Record 2078, Journal of the Transportation Research Board*, National Research Council, Washington, D.C., USA, pp. 17-25.

**B. Published/Accepted Papers in Conferences held in Abroad**

1. Paul, M., and **Ghosh, I.** (2016). 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)*, Washington, D.C., USA, January 8–12, 2017.
2. Biswas, S., and **Ghosh, I.** (2016). 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)*, Washington, D.C., USA, January 8–12, 2017.

3. Biswas, S., Kumar, S., Pandey, S., Chowdhury, S. and **Ghosh, I.** (2016). 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)*, Washington, D.C., USA, January 8–12, 2017.
4. 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 ARRB Conference*, Melbourne, Australia, November 16-18, 2016.
5. Boora, A., and **Ghosh, I.** (2016). Performance Indicator for Two-Lane Intercity Highways under Heterogeneous Traffic condition, Paper ID # 129, *Presented at the 19th EURO Working Group on Transportation Meeting (EWGT) Conference*, Turkey, Istanbul, September 5-7, 2016.
6. 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 (ICTE)*, Tehran, Iran, March 1-2, 2016.
7. 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)*, Washington, D.C., USA, Jan 10-14, 2016.
8. Jeevitha, D., Biswas, S., and **Ghosh, I.** (2015). The Effect of Countdown Timer on the Approach Speed at Signalised Intersections. *Procedia Computer Science*, Vol. 52, pp. 920-925, *4th International Workshop on Agent-based Mobility, Traffic and Transportation Models, Methodologies and Applications (ABMTRANS 2015)*, London, United Kingdom, June 2-5, 2015.
9. Mardani, M., Chandra, S., and **Ghosh, I.** (2015). Passenger Car Unit of Vehicles on Undivided Intercity Roads in India, *Procedia Computer Science*, Vol. 52, pp. 926-931, *4th International Workshop on Agent-based Mobility, Traffic and Transportation Models, Methodologies and Applications (ABMTRANS 2015)*, London, United Kingdom, June 2-5, 2015.
10. **Ghosh, I.**, Savolainen, P.T., and M. Duffy, (2011). Analysis of Factors Affecting the Clearance Time of Freeway Incidents. Paper no. 12-0458, *Presented at the 91st Meeting of the Transportation Research Board*, Washington, D.C., USA, January 22-26, 2012.
11. 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*, Washington, D.C., USA, January 10-14, 2010.

C. *Refereed Papers in Conference Proceedings held in India*

1. 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.
2. 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.
3. 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.
4. 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, National conference on fifteen years of PMGSY, Roorkee, India, August 6-7, 2016.
5. 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.
6. 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.
7. **Ghosh, I.**, Chandra, S., & Boora, A. (2013). Operational Performance Measures for Two-Lane Roads: An Assessment of Methodological Alternatives. *Procedia-Social and Behavioral Sciences*, Vol. 104, pp. 440-448, *2nd Conference of Transportation Research Group of India (2nd CTRG)*, Agra, India, December 12-15, 2013.
8. **Ghosh, I.**, and Grillo, L. (2011). Child Restraint Device Usage in the State of Michigan. Paper no. 20, *Proceedings of the 1st Conference of Transportation Research Group of India*, Bangalore, December 2011.
9. **Ghosh, I.**, and Savolainen, P.T. (2011). Investigation of Emergency Vehicle Crashes in the State of Michigan. Paper no. 30, *Proceedings of the 1st Conference of Transportation Research Group of India*, Bangalore, December 2011.

10. **Ghosh, I.**, and Savolainen, P.T. (2011). Analysis of Factors Affecting the Incident Clearance Time for Freeway Courtesy Patrol Operations, Paper no. 39, *Proceedings of the 1st Conference of Transportation Research Group of India*, Bangalore, December 2011.
11. **Ghosh, I.**, and Savolainen, P.T. (2011). Analysis of Risks Associated with Alternate Truck Routes on Two-Lane Highways, Paper no. 89, *Proceedings of the 1st Conference of Transportation Research Group of India*, Bangalore, December 2011.
12. 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)*, January 2005, Indian Institute of Technology Kharagpur, India, pp. 482-488.
13. **Ghosh, I.** (2005). Reliability Analysis of Pavements - State of the Art. *Proceedings of All India Science, Technology and Engineering Students Academic Meet 2005*, January 2005, Bengal Engineering and Science University, Shibpur, Howrah, India, pp. 84-89.

#### D. Technical Reports

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. Savolainen, P.T. and **Ghosh, I.** (2011). Investigation of Freeway Operations in Metro Detroit, NEXTRANS Project No. 074WY03. USDOT Region V Regional University Transportation Center Final Report, NEXTRANS Center, Purdue University, West Lafayette, Indiana, USA.
3. Savolainen, P. and **Ghosh, I.** (2010). Using Detector Data to Identify and Examine Crashes and Incidents on Freeways, NEXTRANS Project No. 051WY02, USDOT Region V Regional University Transportation Center Final Report, NEXTRANS Center, Purdue University, West Lafayette, Indiana, USA.
4. Savolainen, P., Dey, K., **Ghosh, I.**, Karra, T. and A. Lamb, (2009). Investigation of Emergency Vehicle Crashes in the State of Michigan, NEXTRANS Project No. 015WY01, USDOT Region V Regional University Transportation Center Final Report, NEXTRANS Center, Purdue University, West Lafayette, Indiana, USA.
5. Wayne State University Transportation Research Group, (2010). Evaluation of an Emergency Vehicle Alert System for Signalized Intersections Results from Field Evaluations at Sibley Road/Telegraph Road and Sibley Road/Allen Road, Brownstown, Michigan, USA. Final Report, FHWA Request to Experiment Number 2-613(E).
6. Wayne State University Transportation Research Group, (2009) Evaluation of an Emergency Vehicle Alert System for Signalized Intersections in the Township of Grosse Ile, Michigan, USA. Final Report, FHWA Request to Experiment Number 2-613(E).

#### E. Journal papers currently under review

1. Paul, M. and **Ghosh, I.** (2017). A Proactive Approach of Safety Evaluation at Unsignalized Intersections Using a New Speed Based Indicator, Manuscript No. TEENG-4441, *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*.
2. Biswas, S., Chandra, S. and **Ghosh, I.** (2017). Estimation of Vehicular Speed and Passenger Car Equivalent Under Mixed Traffic Condition Using Artificial Neural Network, AJSE-D-17-00407, *Arabian Journal for Science and Engineering, Springer*.
3. Boora, A., **Ghosh, I.** and Chandra, S. (2016). What Characterizes a Vehicle as "Follower" on Two - Lane Intercity Highways under Heterogeneous Traffic Conditions? Manuscript No. TEENG-4052, *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*
4. Biswas, S., Kumar, S., Pandey, S., Chowdhury, S. and **Ghosh, I.** (2016). Modeling of the Drivers' Decision-Making Behavior During Yellow Phase, Manuscript No. TEENG-4298, *Journal of Transportation Engineering, Part A: Systems, American Society of Civil Engineers (ASCE)*
5. Boora, A., **Ghosh, I.** and Chandra, S. (2016). Assessment of Platooning Variables to Evaluate the Performance of Two-Lane Intercity Highways Under Heterogeneous Traffic Condition, Manuscript No. KSCE-D-16-01999, *KSCE Journal of Civil Engineering*.
6. Biswas, S., **Ghosh, I.** and Chandra, S. (2016). Conceptual Method for Computing Stream Equivalency Factor at Signalized Intersections Under Heterogeneous Traffic Condition, Manuscript No. AJSE-D-16-03510, *Arabian Journal for Science and Engineering, Springer*.
7. Biswas, S., **Ghosh, I.** and Chandra, S. (2016). Analysis of Drivers Characteristic in The Presence of Countdown Timer at Signalized Intersections. *Transportation Research Part C: Emerging Technologies, Elsevier*.

*F. Book chapter*

1. Sarkar, A. K., Arkatkar, S., Rao, V. and **Ghosh, I.** (2013). "Fundamentals of Transportation Systems: Highways, Railways, Airways and. Waterways", Central Board of Secondary Education (CBSE), May 2013, New Delhi.

**SUPERVISION OF DISSERTATION/THESES/PROJECTS**

**Completed:**

*Doctor of Philosophy (Ph.D.) dissertation(s) at IIT Roorkee*

1. Effect of capacity for single, intermediate and two-lane inter-urban roads (Name of Student: Mr. Mohammad Mardani Nokandeh) Degree awarded in 2016

*Master of Technology (M.Tech.) theses at IIT Roorkee*

2. Effect of approach width on saturation flow at signal controlled intersections (Name of Student: Mr. S V Subrahmanyam Kommana, Co-supervisor: Prof. Satish Chandra) 2012-13
3. Analysis of approach speed at signal controlled intersections with countdown display (Name of Student: Ms. Devalla Jeevitha) 2013-14
4. Effect of Countdown Display on Queue Discharge Characteristics (Name of Student: Mr. Kottuvada C V Krishna) 2013-14
5. A study on LOS parameters for two-lane roads in mixed traffic (Name of Student: Ms. Praveena Penmetsa, Co-supervisor: Prof. Satish Chandra) 2013-14
6. Effect of carriageway and shoulder width on capacity of two lane rural roads (Name of Student: Mr. Ved Prakash) 2014-15
7. Effect of turning-lane use on saturation flow at signal controlled intersection Name of Student: Mr. Jagbir Singh Kalra, Co-supervisor: Prof. Satish Chandra) 2014-15
8. Analysis of accidents on hilly stretches of National Highways roads (Name of Student: Mr. Madhusoodan Sharma, Co-supervisor: Prof. M. Parida) 2014-15
9. Traffic safety assessment at intersection locations using microscopic simulation (Name of Student: Mr. Akhil Rana, Co-supervisor: Prof. Satish Chandra) 2014-15
10. Measurement and Analysis of Delay at Uncontrolled Intersections (Name of Student: Mr. Apoorv Jain, Co-supervisor: Prof. Satish Chandra) 2015-16
11. Effectiveness of Signal Countdown Displays on Pedestrian Movements (Name of Student: Mr. Sumit Kumar) 2015-16
12. Analysis of Traffic Flow on urban streets (Name of Student: Mr. Shivendra, Co-supervisor: Prof. Satish Chandra) 2015-16
13. Analysis of Traffic Flow on urban streets (Name of Student: Mr. Shivendra, Co-supervisor: Prof. Satish Chandra) 2015-16

*Master of Engineering (M.E.) theses at BITS Pilani*

1. Analysis of pedestrian crossing behaviour at mid-block locations (Name of Student: Mr. Praveen Singh, Co-supervisor: Dr. Shrinivas Arkatkar) 2011-12
2. Examining modal shift behaviour of passengers from private mode to BRTS (Name of Student: Mr. Kiran Gowda K S, Co-supervisor: Prof. Ashoke Sarkar) 2011-12

*B.Tech. projects at IIT Roorkee*

1. Stop and Go Modelling on Signalized Intersection [2014-15]
2. Analysis of Traffic Behaviour at Signalised Intersection Enabled with Countdown Timer [2013-14]
3. Questionnaire Survey related to user perception of countdown timer [2013-14]
4. Relationship between Time Headway and Free Flow Speed [2012-13]
5. Study of Traffic at Signalized Intersections [2012-13]

**Ongoing:**

*Doctor of Philosophy (Ph.D.) dissertations at IIT Roorkee*

1. Operational Performance Measures for Inter-urban Highways (Name of Student: Mr. Amardeep Boora)
2. Effect of countdown display on traffic behaviour at signalised intersections (Name of Student: Mr. Sabyasachi Biswas)
3. Capacity analysis of urban streets under mixed traffic conditions (Name of Student: Mr. Subhadip Biswas, Co-supervisor: Dr. Satish Chandra)
4. Measurement and analysis of delay at signal controlled intersections (Name of Student: Ms. Arpita Saha, Co-supervisor: Dr. Satish Chandra)
5. Application of surrogate road safety measures in intersections using microsimulation (Name of Student: Ms. Madhumita Paul)

*Master of Technology (M.Tech.) theses at IIT Roorkee*

1. Development of conflict-based accident prediction model for signalized intersections (Name of Student: Mr. Abhishek Kumar Singh) 2016-18
2. Development of conflict-based accident prediction model for unsignalized intersections (Name of Student: Ms. Aparna Singh) 2016-18
3. Evaluation of intersection safety using speed-based indicators in microsimulation (Name of Student: Mr. Jagjit Kumar) 2016-18
4. Analysis of pedestrian conflicts with right turning traffic at signalized intersections (Name of Student: Mr. Abhinav Kumar, Co-supervisor: Dr. Rajat Rastogi) 2015-17
5. Analysis of vehicular deceleration characteristics leading to unsafe driving situations (Name of Student: Mr. Joginder Pratap Singh, Co-supervisor: Prof. M. Parida) 2015-17
6. Investigation of driver behaviour at the onset of a yellow phase transition (Name of Student: Mr. Mukul Giri Goswami) 2015-17
7. Effect of pedestrian movement on the capacity of two-lane urban roads (Name of Student: Mr. Sourav Das) 2015-17
8. Safety assessment at unsignalised intersections using post encroachment time (PET) (Name of Student: Mr. Tarun Pakhariya) 2015-17

*B.Tech. projects at IIT Roorkee*

1. Safety assessment of unsignalized intersection through microsimulation modelling [2016-17]
2. Safety assessment of signalized intersections using microsimulation modelling [2016-17]
3. Optimizing the traffic parameters for intercity two lane highways using microsimulation [2016-17]
4. Microsimulation modeling of traffic at unsignalized intersections [2015-16]
5. Safety assessment at unsignalized intersections [2015-16]

**VISIT TO OTHER INSTITUTIONS**

- BGIET, Sangrur, Punjab: Keynote speaker & Chair of technical session at the 4th International Conference on Advancements in Engineering & Technology (ICAET-2016) [March 18-19, 2016]
- NIT Surat, Gurajat: M.Tech. Thesis examination [August 12, 2016]
- NIT Patna, Bihar: Resource person for “Emerging Trends in Road Safety Research & Management” Workshop [February 19-20, 2016]
- NIT Hamirpur, Himachal Pradesh: M.Tech. Thesis examination [August 28, 2015]

- NIT Karnataka, Surathkal: Resource person for TEQIP sponsored three-day workshop on “Mitigation of Road Disasters” [September 15-17, 2014]
- BITS Pilani, Pilani, Rajasthan: Expert to review the progress of a NRRDA sponsored research project titled “Impact of PMGSY Roads on Accessibility in Rural Areas” [September 5-6, 2014]
- IIT Madras, Chennai: Workshop on Using Science and Data in Road Safety Management [February 15-17, 2013]

#### **SPECIAL LECTURE AT IIT ROORKEE**

- AICTE Sponsored course on “Urban Transportation Systems Planning” [June 17-21, 2013]
- NRRDA sponsored training course for Engineers of Road Construction Department of Bihar [February 26-28, 2013]

#### **SHORT TERM/SPONSORED COURSES ORGANIZED**

- Course coordinator for AICTE sponsored short term course on *Modelling with Transportation Data* (MTD) along with Dr. Rajat Rastogi [June 8 - 12, 2015]

#### **ACADEMIC ACHIEVEMENTS**

- Received the Institute of Transportation Engineers (ITE) Michigan Section Education-Scholarship award in the year 2008.
- Honored with prestigious Thomas C. Rumble Fellowship for exceptional academic performance from College of Engineering at Wayne State University (WSU) for the year 2007-2008.
- All India Rank of 566 out of 9340 attended (percentile of 93.76) in the Graduate Aptitude Test in Engineering (GATE 2003) in the field of Civil Engineering. Awarded with Post Graduate scholarship and a contingency grant as per University Grant Commission (UGC) and All India Council of Technical Education (AICTE) norms.

#### **SOFTWARE PACKAGES**

- Econometric/Statistical: LIMDEP 9 (NLOGIT 4), SPSS, SAS, STATA, AMOS, LISREL, MATLAB
- Transportation: HCS, SYNCHRO, SimTraffic, PASSER
- Others: AutoCAD, ArcGIS, Microsoft Office, MS SQL Server 2008 (Beginner’s level).

#### **RELEVANT GRADUATE COURSEWORKS DONE**

##### **• In US**

Highway Safety and Risk Management, Highway Design, Advanced Traffic Signal Systems, Traffic Engineering Control and Operations, Advanced GIS Applications, Economic Analysis in Transportation Systems, Introductory Statistics and Econometrics, Civil Engineering Research Methods, Statistical Methods and Applications, Introduction to Stochastic Processes, Structural Equations, Econometrics 1, Pavement Management Systems, Transportation Policy and Planning, Urban Transportation Planning.

##### **• In India**

Highway Economics & Geometric Design, Advanced Traffic Engineering, Pavement Design I, Pavement Design II, Advanced Numerical Methods and Computer Programming, Remote Sensing, Traffic Flow Theory and Control, Transportation Planning and Management, Optimization in Transportation Planning, Stability Problem in Geotechnical Engineering.

#### **PROFESSIONAL ACTIVITIES**

##### **Memberships**

- Member (ID#: 1012844), Institute of Transportation Engineers (ITE), Michigan and International Chapter
- Associate Member (ID#: 996917), American Society of Civil Engineers (ASCE)
- Member, Chi Epsilon- Honor Society for International Scholars
- Lifetime Member, Indian Roads Congress (IRC), New Delhi, India
- Lifetime Member, Transportation Research Group (TRG), India
- Lifetime Member, Indian Society for Construction Materials and Structures (ISCMS)

##### **Institute/Department Level Services**

- Officer-in-Charge M.Tech. (Transportation Engineering) 2014-16
- Member, Departmental Academic Committee, Department of Civil Engineering, IIT Roorkee, 2014-16
- Member, Departmental Administrative Committee, Department of Civil Engineering, IIT Roorkee, 2013-16

- Staff Advisor (Yoga), Institute Sports Council, IIT Roorkee, 2013-16
- Staff Advisor (Taekwondo), Institute Sports Council, IIT Roorkee, 2013-16
- Joint Programme Coordinator for the Brainstorming Session on Landslide Problems in Himachal Pradesh, on April 27-28, 2012, being conducted by Civil Engineering Department, NIT Hamirpur.
- Participation in Chi-Epsilon, Civil Engineering Spring Honor Banquet (2007, 2008, 2009, 2010), Wayne State University, Detroit, Michigan, USA
- Organization of “Drive Safely to Wayne State” Campaign (2006, 2007, 2008, 2009, 2010), Wayne State University, Detroit, Michigan, USA
- “Click it or Ticket” Observation (2007, 2008, 2009), Michigan, USA
- Assisting Civil Engineering student assistants with transportation concepts and software packages, Wayne State University, Detroit, Michigan, USA
- Active member of the University’s reunion (REBECA) organizing committee during the bachelor degree program, Bengal Engineering College (a Deemed University), Shibpur, West Bengal
- Actively participated in conducting seminars and presentations in Civil and Environmental Engineering Department both in Wayne State University Detroit, Michigan, USA and Bengal Engineering and Science University, Shibpur, West Bengal

**Other Extra-Curricular Activities**

- Took part in various blood donation camps
- Won first prizes in Yoga in the district competitions and represented district at state level
- Active member of Solution Exchange Education community (co-facilitated by UNESCO and UNICEF and an initiative of United Nations’ Agencies in India)