

Brief CV



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EDUCATION

- 2009 **Doctor of Philosophy (Ph.D.) in Civil (Transportation) Engineering**, Indian Institute of Technology (IIT) Bombay, Mumbai, India
Ph.D. Thesis Supervisor: Professor K. V. Krishna Rao (Deputy Director, IIT Bombay)
Title of the Thesis: Defining Level of Service Criteria for Urban Streets in Indian Context
- 2003 **Masters of Technology in Transportation Engineering**, Indian Institute of Technology (IIT) Roorkee, Uttarakhand, India
M. Tech. Thesis Supervisor: Professor Satish Chandra (Ex. Director, Central Road Research Institute, New Delhi)
Title of the Thesis: Accident Analysis on Two-Lane Roads
- 1998 **Bachelor of Technology in Civil Engineering**, CET, OUAT (now OUTR), Bhubaneswar, Odisha, India

PROFESSIONAL EXPERIENCE

- July-2024-Till date **Associate Professor**, Department of Civil Engineering, NIT Rourkela
- 2011-June 2024 **Assistant Professor**, Department of Civil Engineering, NIT Rourkela
- 2009-11 **Manager-Traffic and Transportation**, Scott Wilson India Pvt. Ltd., New Delhi, India
- 2008-09 **Research Associate**, Department of Civil Engineering, IIT Bombay, India
Post-Doctoral Fellow (PDF), School of Civil and Environmental Engineering, Georgia Tech., USA
- 2003-07 **Research Scholar (Ph.D.)**, Department of Civil Engineering, IIT Bombay, India

GRANTS (Research and Consultancy Projects)

- 2011- State Technical Agency (STA), Scrutiny of PMGSY Roads, National Rural Road Development Agency (NRRDA), Co-PI. (INR 10,00,000)
- 2011-12 Quality audit of roads funded by world Bank, Works Department, Government of Odisha, India, Co-P.I. (INR 20,00,000)
- 2015-16 Proof checking of Design for the Construction of roads in northeast India, UPRNN Limited unit Rourkela, Odisha, PI

- 2016-17 A Study on Utilization of Fly-ash and slag in Road Pavement, Works Department, Government of Odisha, India, Co-P.I. (INR 44, 64,000)
- 2016-18 Road Safety Audit of NH-215 Panikoili Keonjhar Rimuli, NHAI, GOI, Co-P.I. (INR 74,00,000)
- 2021-22 Traffic Density Study, Rengalbeda (NE) Iron Ore Block, Barbil Tahasil, Odisha Mineral Exploration Corporation Limited, PI (INR 8,20,000)
- 2022-22 Third Party Quality Assurance for Construction of EMRS (Eklavya Model Residential School) at 10 Locations in Odisha, Bridge & Roof Co. (I) Ltd, Co-P.I. (INR 44, 48,037)
- 2022-22 Proof checking of Report on Traffic studies part of EIA report on Rourkela Airport, SAIL Rourkela, PI (INR 1,35,000)
- 2023-23 Proof checking of Report on Traffic Impact Study on Mahagiri chromite mines, Imfa Kaliapani, PI (INR 2,72,000)

HONORS/AWARDS

2023,

- 2322 Received institute award for **Best Faculty Advisor** of B. Tech. Civil Engineering Students
- 2018 Received **DST Travel grant** to attend TRB annual meeting held at Washington, USA, 13-17, 2019.
- 2011 Received **Commendation Certificate** for the Research Paper entitled “Level of Service Criteria of Urban Streets for India Cities” Printed in the Highway Research Journal of the IRC, Volume 3 No.2., 2011.
- 2008 Received Fellowship for **Post-doctoral Research** at Georgia Institute of Technology, USA (Six months)
- 2007 Received CSIR Travel Grant to attend World Conference on Transport Research (WCTR) held at University of California, Berkeley.
- 2001 Qualified in Graduate Aptitude Test in Engineering (GATE) - Percentile Score: 96.58, AIR- 135

TEACHING EXPERIENCES

Subjects Taught/Teaching:

- Transportation Engineering
- Transportation Systems planning
- Evaluation and Strengthening of Pavements
- Environmental and Safety Engineering
- Civil Engineering Materials and Construction
- Highway Engineering Laboratory
- Software Applications and Transportation Engineering
- Engineering Drawing

LEADERSHIP ACTIVITIES

- At NITR, Professor-in-charge- Traffic lab, highway lab, library, member of quality monitoring of civil construction, department direct purchase, Member Transport committee, PIC- AKRITI Club, Convenor Convocation dress materials

- Chaired sessions at World Conference Transportation Research-2023, Montreal, Canada
- Chaired sessions at World Conference Transportation Research-2019, IIT Bombay
- Reviewer of Journal of Traffic and Transportation Engineering, Elsevier Publication.
- Reviewer of Transport Reviews Journal, Taylor and Francis Publication.
- Reviewer of Transport Journal, Taylor and Francis Publication.
- Scientific Committee Member of TPMDC Conference of IIT Bombay.
- Session and Logistics Committee Member of TPMDC Conference of IIT Bombay

EXPERTISE

- Traffic studies of Urban Road network, National Highways, Mines Road
- Long Term transportation planning for urban roads, mines road
- Rural road studies (PMGSY etc.)
- Quality Audit of Road Projects
- Road safety analysis
- Service quality and capacity studies of different road infrastructures
- Maintenance of roads
- Freight traffic operations and demand modelling
- Design of road sections
- Traffic Impact Study of Infrastructure Expansion projects including mine capacity expansion
- Sustainable Transportation Systems
- AI/ML applications in Transportation Engineering
- Operations and Mobility plan for non-motorized transportation systems
- Tolling/Ticketing systems and its performance analysis
- Green energy applications for sustainable development

EXPERIENCES IN CONDUCTING CONSULTANCY PROJECTS AT NITR (Recent First)

- **Traffic Density Study, Rengalbeda (NE) Iron Ore Block, Barbil Tahasil, Keonjhar, Odisha, Odisha Mineral Exploration Corporation Limited (OMECL).**

Principal Investigator: Prof. P. K. Bhuyan, NIT Rourkela

Traffic Density Study, both inside the mines and at haulage roads, intersecting points of haulage road with public road pertaining to Rengalbeda (NE) Iron ore Block over an area of 24.203 ha located in village Nuagaon and Gandhalpada under Barbil Tahasil of Keonjhar district of Odisha, allotted to Odisha Mineral Exploration Corporation Ltd. (OMECL)", was entrusted to Prof. P. K. Bhuyan, NITR Rourkela.

The study was carried out by conducting traffic surveys at various locations within the mines influence area. Interim, draft final and a revised final report incorporating comments were submitted. Corona Pandemic in the month of January and February-2022 affected the above study; however, the report was submitted in the month of May-2022 and the project was closed in March 2023.

- **Proof checking of Report on Traffic Impact Study on Mahagiri chromite mines, IMFA, Kaliapani, Jajpur, Odisha.**

Principal Investigator: Prof. P. K. Bhuyan, NIT Rourkela

The proposed project is expansion in production capacity of Chromite ore from 3 LTPA to 6 LTPA by fully mechanized underground mining. The Mahagiri Mine (Chromite) of M/s Indian Metals Ferro Alloys having a mining lease area of 73.777 ha is situated at Plot No. 893 (part), 894 (part), 895 (part), Forest block no. 27, Village- Kaliapani, Tehsil: Sukinda, Distt: Jajpur, Orissa. As per EIA Notification 2006 and amendments thereafter, this project is a developmental activity which falls in the list of projects which cause pollution hence its EIA study is mandatory. As per EIA notification 2006 and its subsequent amendments, the proposed project is Sc: 1 (a) Category “B”.

The project site is likely to add a significant number of trips, especially during the peak hours in addition to the existing traffic. This may lead to conflict with the traffic on the Arterial road outside the site leading to congestion on the access roads emanating from the project site as well as the Sub-arterial road along it. Also, the traffic on the Sub-arterial roads may affect the access to the project, causing delays to affect safety. A need exists to examine the likely traffic impact and suggest mitigating measures to minimize the impact.

The Traffic Impact Assessment Report prepared by Environmental Consultant Perfact Enviro Solutions Pvt. Ltd. for M/s IMFA Ltd. as part of Environment Impact Assessment (EIA) report and submitted for getting Environment Clearance for Mahagiri mines expansion in production capacity of Chromite ore from 3 LTPA to 6 LTPA. **The traffic impact assessment report was verified, and several observations were reported in April 2023.**

- **Proof checking of Report on Traffic studies part of EIA report on Rourkela Airport, SAIL Rourkela.**

Principal Investigator: Prof. P. K. Bhuyan, NIT Rourkela

The Traffic Study Report prepared as part of Environment Impact Assessment (EIA) report and submitted for getting Environment Clearance for Rourkela Airport Up-gradation project was verified. The traffic study report as part of the EIA study was prepared by Environmental Consultant M/S Gaurang Environmental Solutions Pvt. Ltd. **The observation report was submitted in December 2022 by Prof. P. K. Bhuyan, NIT Rourkela** by following standard methodology for data collection, its analysis and assessment of traffic, in-view of proposed Rourkela Airport Up-gradation project vis-à-vis existing capacity of road network.

- **Road Safety Audit of NH-215 Panikoili -Keonjhar to Rimuli, NHAI, GOI**

Co-Principal Investigator: Prof. P. K. Bhuyan, NIT Rourkela

Road Safety Consultant (RSC) has reviewed the design and drawing for Four Laning of Panikoili to Rimuli of NH-215 from Km0.0 to Km166.173 under NHDP in the State of Odisha on Design, Build, Finance, Operate and Transfer (DBFOT) Basis.

The main objectives of this Consultancy Service were for Safety Audit during Development, Construction and Operation & Maintenance Phase of 4-laning National Highways under Public Private Partnership (PPP) on Design, Build, Finance and Operation (DBFOT) basis of the above Project.

This Safety Audit Report – Development Stage is the outcome of detailed review of the highways plans with respect to the safety of road users. As part of the review the design elements such as minimum radii of horizontal curves, superelevation, vertical curves, longitudinal gradients, tapers, design of exit and entry ramp on highways, bus bay, truck lay by, toll plaza, median openings and characteristic features of identified hotspots on the project stretch among others were checked to see if they were in accordance with IRC, MORTH, good industry practice and other relevant standards. The major findings from the review of the design & drawings and as per site visits have been submitted vide letter no. NITR/CE/MP/L/2016/2032(3) dated 20.12.2016.

RELEVANT EXPERIENCES IN CONDUCTING CONSULTANCY PROJECTS (Scott Wilson India Pvt. Ltd., Mathura Road, New Delhi)

- Overall Perspective Plan of Delhi Mumbai Industrial Corridor (Transportation planning)
- Prefeasibility Study of Pune-Nashik Expressway (Transportation Projection & Design)
- Sub-regional plan of Haryana Sub-region in NCR (Transportation Planning)

SELECTED PUBLICATIONS

Journal Publications

Year 2024

1. A.C. Pal, M. Panda, **P. K. Bhuyan** “Mechanical and microstructural properties of pavement quality concrete using both Class-F fly-ash and copper slag”, Road Materials and Pavement Design, Taylor and Francis Publications, Volume-25, Issue-6, Pages 1340-1367, <https://doi.org/10.1080/14680629.2023.2266844>.

Year 2023

2. Abhijnan Maji, Subhada Nayak, Mahabir Panda, and **P. K. Bhuyan**, “Service level modelling of motorized three-wheelers at un-signalized intersections under heterogeneous traffic conditions”, European Transport \ Trasporti Europei 2022, Issue-88, Paper No-2., DOI: 10.48295/ET.2022.88.2
3. Abinash Chandra Pal, Mahabir Panda, and **P. K. Bhuyan**, “Analysis of Flexural Fatigue for Pavement Quality Concrete Containing Copper Slag as Replacement of River Sand” Journal of Material in Civil Engineering, June 2023 (Article in Press),10.1061/JMCEE7/MTENG-16227

Year 2022

4. S. K. Patra, M. Panda, A. K. Das, **P. K. Bhuyan**. "Performance evaluation of surface treated montmorillonite nanoclay-modified bitumen binder at high-and intermediate

temperature conditions". Road Materials and Pavement Design, Taylor and Francis. vol.23, no.1, pp.1-23, May 2022. 10.1080/14680629.2022.2072374

5. S. K. Beura, **P. K. Bhuyan**. "Development of Artificial Intelligence-based Bicycle Level of Service Models for Urban Street Segments". International Journal of Intelligent Transportation Systems Research, Springer. vol.20, no.1, pp.142–156, Apr 2022. 2022., 10.1007/s13177-021-00280-3
6. S. Jena, S. Patro, M. Dutta, **P. K. Bhuyan**. "Assessment of service quality at unsignalized intersections using traffic simulation and computational intelligence". Transportation Letters, The International Journal of Transportation Research, Taylor and Francis, vol.14, no.4, pp.365-377, May 2022. 10.1080/19427867.2020.1868179

Year 2021

7. A. K. Patnaik, S. Chaulia, **P. K. Bhuyan**. "Roundabout entry capacity models: genetic programming approach". Proceedings of the Institution of Civil Engineers-Transport, ICE Publishing. vol.174, no.3, pp.182-196, Jun 2021. 10.1680/jtran.17.00089
8. S. K. Beura, H. Chellapilla, M. Panda, **P. K. Bhuyan**. "Bicycle Comfort Level Rating (BCLR) model for urban street segments in mid-sized cities of India". Journal of Transport & Health, Elsevier. vol.20, no.100971, Mar 2021. 10.1016/j.jth.2020.100971
9. S. K. Beura, A. Srivastava, **P. K. Bhuyan**. "Unsignalized Intersection Level of Service: A Bicyclist's Perspective". International Journal of Intelligent Transportation Systems Research, Springer. vol.19, no.2, pp.405- 416, Jun 2021. 10.1007/s13177-020-00244-z

Year 2020

10. Sambit Kumar Beura, Kondamudi Vinod Kumar, Shakti Suman, **Bhuyan, P.K. (2020)**, "Service quality analysis of signalized intersections from the perspective of bicycling" Journal of Transport & Health, vol.16, no.100827, March 2020, 10.1016/j.jth.2020.100827
11. A. K. Patnaik, L A. Agarwal, M. Panda, **P. K. Bhuyan**. "Entry capacity modelling of signalized roundabouts under heterogeneous traffic conditions". Transportation Letters, The International Journal of Transportation Research, Taylor and Francis. vol.12, no.2, pp.100-112, Feb 2020. 10.1080/19427867.2018.1533160
12. A. K. Patnaik, R. Patra, **P. K. Bhuyan**. "Comparison of artificial intelligence based roundabout entry capacity models". International Journal of Intelligent Transportation Systems Research, Springer. vol.18, no.2, pp.288-296, May 2020. 10.1007/s13177-019-00207-z

Year 2019

13. Patnaik, A., Patra, R. and **Bhuyan, P. K.** (2019) "Comparison of Artificial Intelligence Based Roundabout Entry Capacity Models", International Journal of Intelligent Transportation Systems Research, Springer, DOI: <https://doi.org/10.1007/s13177-019-00207-z>.
14. Jena, S., Pradhan, D. and **Bhuyan, P. K.** (2019) "Modelling automobile users' response pattern in defining urban street level of service", Transport, Taylor and Francis

publications, Volume 34 Issue 3: 287–299, DOI:
<https://doi.org/10.3846/transport.2019.9405>.

15. Sahani, R. and **Bhuyan, P. K.** (2019) “Pedestrian service quality models at un-signalized crossings”, *Advances in Transport Studies*, Volume-XLVII, Page, 61-74.
16. Patnaik, A. K., Agarwal, L.A., Panda, M. and **Bhuyan, P. K.** (2019) “Entry capacity modelling of signalized roundabouts under heterogeneous traffic conditions”, *Transportation Letters: The International Journal of Transportation Research* vol.12, no.2, pp.100-112 2020, [10.1080/19427867.2018.1533160](https://doi.org/10.1080/19427867.2018.1533160)

Year 2018

17. Jena, S. Chakraborty, A. and **Bhuyan, P. K.** (2018) “Performance Assessment of Urban Streets Addressing Improvement Issues for Automobile Mode of Transport”, *Transportation Research Record*, Transportation Research Board, SAGE Publication, DOI: [10.1177/0361198118782761](https://doi.org/10.1177/0361198118782761)
18. Jena, S., Panda, M. and **Bhuyan, P. K.** (2018) “Development of Sulfur Modified Bituminous Paving Mixes Containing Sand as Aggregates”, *ASTM International*, DOI: [10.1520/ACEM20170085](https://doi.org/10.1520/ACEM20170085).
19. Jena, S., Atmakumari, P. and **Bhuyan, P. K.** (2018) “Evaluating Service Criteria of Urban Streets in Developing Countries Based on Road Users’ Perception”, *Transportation in Developing Economies*, Springer Publications, Volume-4, No.-1, 90-105. DOI [10.1007/s40890-017-0055-8](https://doi.org/10.1007/s40890-017-0055-8)
20. Patnaik, A.K. Ranjan, A.R. A. and **Bhuyan, P. K.** (2018) “Investigating Entry Capacity Models of Roundabouts Under Heterogeneous Traffic Conditions”, *Transportation Research Record*, Transportation Research Board, SAGE Publication, DOI: [10.1177/0361198118777603](https://doi.org/10.1177/0361198118777603)
21. Patnaik, A. K., Chaulia, S. and **Bhuyan, P. K.** (2018) “Roundabout entry capacity models: Genetic programming approach”, *Proceedings of the Institution of Civil Engineers – Transport*, ICE Publishing. DOI: [10.1680/jtran.17.00089](https://doi.org/10.1680/jtran.17.00089)
22. Beura, S.K. and **Bhuyan, P. K.** (2018) “Operational Analysis of Signalized Street Segments Using Multigene Genetic Programming and Functional Network Techniques”, *Arab J Sci Eng*, Springer Publications, First Online: 27 February 2018, DOI <https://doi.org/10.1007/s13369-018-3176-4>.
23. Beura, S.K., Manusha, V.L., Chellapilla, H. and **Bhuyan, P. K.** (2018) “Defining Bicycle Levels of Service Criteria Using Levenberg–Marquardt and Self-organizing Map Algorithms”, *Transportation in Developing Economies* 4(2) DOI: [10.1007/s40890-018-0066-0](https://doi.org/10.1007/s40890-018-0066-0).
24. Beura, S.K. and **Bhuyan, P. K.** (2018) “Quality of Bicycle Traffic Management at Urban Road Links and Signalized Intersections Operating under Mixed Traffic Conditions”, *Transportation Research Record*, Transportation Research Board, SAGE Publication, DOI: [10.1177/0361198118796350](https://doi.org/10.1177/0361198118796350).
25. Das, A. K. and **Bhuyan, P. K.** (2018) “Self-Organizing Tree Algorithm (SOTA) Clustering for Defining Level of Service (LOS) Criteria of Urban Streets”, *Periodica Polytechnica Transportation Engineering*, DOI <https://doi.org/10.3311/PPtr.9911>.
26. Sahani, R., Saipriya, M. and **Bhuyan, P. K.** (2018) “Application of Gap Acceptance Concept to Investigate Crossing Behaviour of Pedestrians at Unsignalized Intersections”, *Transportation in Developing Economies* 4(2) DOI: [10.1007/s40890-018-0068-y](https://doi.org/10.1007/s40890-018-0068-y).

Year 2017

27. Patnaik, A. K., Rao Shweta, Krishna Yadu and **Bhuyan, P. K.** (2017) “Empirical capacity model for roundabouts under heterogeneous traffic flow conditions”, *Transportation letters*, Taylor and Francis Publications, Volume-9, No.-3, 152-165, [://dx.doi.org/10.1080/19427867.2016.1203583](https://dx.doi.org/10.1080/19427867.2016.1203583).
28. Patnaik, A. K., Krishna Yadu, Rao Shweta and **Bhuyan, P. K.** (2017) “Development of Roundabout Entry Capacity Model Using INAGA Method for Heterogeneous Traffic Flow Conditions”, *Arab J Sci Eng*, Springer Publications, Volume-42, Page 4181–4199. DOI 10.1007/s13369-017-2677-x.
29. Sahani, R. and **Bhuyan, P. K.** (2017) “Pedestrian Level of service Criteria for Urban Off-Street Facilities in Mid-sized Cities”, *Transport*, Taylor and Francis Publications, Volume-32, No.-2, 221–232. DOI:10.3846/16484142.2014.944210.
30. Sahani, R. and **Bhuyan, P. K.** (2017) “Service Levels of Sidewalks for Pedestrians under Mixed Traffic Environment Using Genetic Programming Clustering”, *KSCE Journal of Civil Engineering*, Springer Publications, Volume-21, No.-7, 2879-2887. DOI 10.1007/s12205-017-0042-y.
31. Sahani, R., Vasundhara Devi, C. and **Bhuyan, P. K.** (2017) “Defining Pedestrian Level of Service at Signalized Intersections through Modelled Parameters and SOM Clustering”, *International Journal for Traffic and Transport Engineering (IJTTE)* 7(4):534-548 DOI: 10.7708/ijtte.2017.7(4).10
32. Pannela, S. K. and **Bhuyan, P. K.** (2017) “Modified INAFOGA method for critical gap estimation at u-turn median openings”, *Int J Civ Eng*, Springer Publications, Volume-15, No.-7, 967-977. DOI <https://doi.org/10.1007/s40999-017-0179-6>.
33. Das, A. K. and **Bhuyan, P. K.** (2017) “Hardcl Method for Defining LOS Criteria of Urban Streets”, *Int J Civ Eng*, Springer Publications, Volume-15, No.-7, 1077-1086. DOI <https://doi.org/10.1007/s40999-017-0207-6>.
34. Beura, S.K. and **Bhuyan, P. K.** (2017) “Development of a bicycle level of service model for urban street segments in mid-sized cities carrying heterogeneous traffic: A functional networks approach”, *J. Traffic Transp. Eng.*, Elsevier Publications, Volume-4, No.-6, 503-521. DOI: 10.1016/j.jtte.2017.02.003.
35. Beura, S.K., Chellapilla, H. and **Bhuyan, P. K.** (2017) “Urban road segment level of service based on bicycle users’ perception under mixed traffic conditions”, *J. Mod. Transport*, Springer Publications, Volume-25, No.-2, 90-105. DOI 10.1007/s40534-017-0127-9.
36. Beura, S.K., Kirankumar, N. and **Bhuyan, P. K.** (2017) “Level of Service for Bicycle Through Movement at Signalized Intersections Operating Under Heterogeneous Traffic Flow Conditions”, *Transportation in Developing Economies*, Springer Publications, Volume-3, No.-2, 90-105. DOI 10.1007/s40890-017-0051-z

Year 2016

37. Patnaik, A. K. and **Bhuyan, P. K.** (2016) “Application of Genetic Programming Clustering in Defining LOS Criteria of Urban Street in Indian Context”, *Travel Behavior and Society*, Elsevier Publications, Volume-3, Page 38-50. DOI: 10.1016/j.tbs.2015.08.003.
38. Patnaik, A. K. and **Bhuyan, P. K.** (2016) “Divisive Analysis (Diana) of Hierarchical Clustering and GPS Data in Defining Level of Service Criteria of Urban Streets”, *Alexandria Engineering Journal*, Springer Publications, Volume-55, Issue-1, Page 407-418. DOI: 10.1016/j.aej.2015.11.003.

Year 2015

39. Patil, A. R., Sahani, R., and Bhuyan, P.K. (2015) “Estimation of Cordon Based Marginal Congestion Cost for Greater Mumbai Road Network”, *European Transport*, Italy, Issue 58, page 1-16.
40. Sahani, R and **Bhuyan, P. K.** (April 2015) “Pedestrian Level of Service Criteria for Urban Off-Street Facilities of Mid-Size Cities Using SOM in ANN”, *IRC*, New Delhi, 13-24.

Year 2014

41. Mohapatra, S. S., and **Bhuyan, P.K.** (2014) “Affinity Propagation Clustering in Defining Level of Service Criteria of Urban Streets”, *Transport*, Taylor and Francis publications, Volume-29, Number-4, page 401-411. DOI: 10.3846/16484142.2014.984242.
42. Das, A. K., and **Bhuyan, P.K.** (2014) “Level of Service Criteria of Urban Streets using Clustering Large Application (CLARA)”, *Advances in Transportation Studies*, Italy, Issue-32, page 75-88. <https://doi.org/10.3311/PPtr.9911>.

Year 2013

43. **Bhuyan P.K.** and Nayak, M. (March 2013) “A Review of Level of Service Analysis of Urban Streets” *Transport Reviews*, Taylor and Francis publications, Volume-33, Number-2, page 219-238. DOI: 10.1080/01441647.2013.779617.

Year 2012

44. **Bhuyan, P.K.**, and Rao K.V.K. (2012) “Defining LOS criteria of urban streets using GPS data: K-means and k-medoid clustering in Indian context”, *Transport*, Taylor and Francis publications, 27(2):149-157 DOI: 10.3846/16484142.2012.692354.
45. Mohapatra, S. S., **Bhuyan P.K.** and Rao K.V.K. (December 2012) “Genetic Algorithm Fuzzy Clustering using GPS Data for Defining Level of Service Criteria of Urban Streets” *European Transport*, Italy, Issue 52, page 7-25.
46. Mohapatra, S. S., and **Bhuyan, P.K.**, (2012) “Self-Organizing Map (SOM) of Artificial Neural Network (ANN) for Defining Level of Service Criteria of Urban Streets”, *International Journal of Traffic and Transportation (IJTTE)*, Serbia, Volume-2, Issue-3, page 236-252. DOI: 10.7708/ijtte.2012.2(3).06

Year 2011

47. **Bhuyan, P.K.**, and Rao K.V.K. (July 2011) “Application of GIS and GPS Tools for the Development of running time models in Urban Indian Context”, *Highway Research Journal*, Indian Roads Congress, January-June, New Delhi, 31-37.
48. **Bhuyan, P.K.**, and Rao K.V.K. (June 2011) “Application of GPS and Clustering techniques in defining LOS Criteria of Signalized Intersections for Indian Cities”, *Indian Highways*, Indian Roads Congress, Volume-4, Issue-1, New Delhi, 69-75.
49. **Bhuyan, P.K.**, and Rao K.V.K. (2011) “Defining LOS criteria of urban streets in Indian Context”, *European Transport*, Issue 49, page-38-52.

Year 2010

50. **Bhuyan, P.K.**, and Rao K.V.K. (2010) “FCM Clustering Using GPS Data for Defining Level of Service Criteria of Urban Streets”, *Transportation Problems: An International Scientific Journal*, Poland. Volume-5, Issue-4, page 105-113. (Scopus)
51. **Bhuyan, P.K.**, and Rao K.V.K. (July 2010) “Level of Service Criteria of Urban Streets for Indian Cities, *Indian Highways*, Indian Roads Congress, December, New Delhi.

Year 2004

52. Chandra S., and **Bhuyan P. K.** (2004) “Accident Analysis on Two-lane roads”, *Highway Research Bulletin*, Indian Road Congress, Volume-70, New Delhi, 77-92.

Publications in International Book Series

1. Subhada Nayak, Mahabir Panda, and **P. K. Bhuyan**,” Delay Analysis of Motorized Three-Wheelers at Roundabouts in Urban Indian Context”, in *Urban Mobility Research in India*, Ince, volume 361, 2022, Springer, November,10.1007/978-981-99-3447-8_18
2. Manisha Biswal and **P. K. Bhuyan**,” Shapley Additive Explanation Method for Assessing Motorized Two-Wheeler Level of Service at Signalized Intersections”, in *Urban Mobility Research in India*, Ince, volume 361, 2022, Springer, November,10.1007/978-981-99-3447-8_19.
3. Sujeet Sahoo, Chaganti Sudha, and **P. K. Bhuyan**,” Performance Analysis of Signalized Intersections from Truck Drivers’ Perspective”, in *Urban Mobility Research in India*, Ince, volume 361, 2022, Springer, November,10.1007/978-981-99-3447-8_20
4. S.Velmurugan,S.Padma, MuktiAdvani, RituSharma, RuchiSinghal, ChetanPatel, VidushiJaya, PremjitKhangana Sanjram, Arti RoshanSoni, KumarAmrit, NitinGoyal, ChithiraUnnikrishnan, NurulHassan, **P. K. Bhuyan** (2021), *Impact of COVID-19 on transportation in urban India*, Elsevier
5. Mahabir Panda, Shubhakanta Barik, Siddhartha Sekhar Mishra, Prateek Kar, **P. K. Bhuyan** (2021), *Performance characteristics of pavement sub-base containing steel slag*, CRC Press.
6. Manisha Biswal, Kudurupaka Vamshikrishna, Sujeet Sahoo, **P. K. Bhuyan** (2021) *Motorized Two-Wheeler Lateral Clearance Behavior in Heterogeneous Traffic: A Sensor Based Approach*, Springer.
7. Subhashree Jena, Mahabir Panda, **P. K. Bhuyan** (2018), *Development of sulfur modified bituminous paving mixes containing sand as aggregates*, ASTM International.
8. Abhishek Chakraborty, Suprava Jena, **P. K. Bhuyan** (1018), *Neural Network Approach to Determine LOS Criteria of Urban Streets for Developing Countries*, American Society of Civil Engineers
9. Jena, S., Dholawala, H., Panda, M. and **Bhuyan, P. K.** (2019) “Assessment of Induced Fuzziness in Passenger’s Perspective of Transit Service Quality: A Sustainable Approach for Indian Transit Scenario”, In book: *Transportation Research, Proceedings of CTRG 2017*, DOI: 10.1007/978-981-32-9042-6_5.
10. Jena, S., Priyanka, A., Beura, S. K. and **Bhuyan, P. K.** (2016) “Application of Fuzzy Inference System to Estimate Perceived LOS Criteria of Urban Road Segments”, *Advances in Intelligent Systems and Computing*, Springer Publications, Volume-467, Page 639-651. DOI: 10.1007/978-981-10-1645-5_54
11. Beura, S. K., Chellapilla, H, Jena, S. and **Bhuyan, P. K.** (2016) “Service Quality Assessment of Shared Use Road Segments: A Pedestrian Perspective”, *Advances in*

Publications in Conferences

Year 2023

1. Subhada Nayak, Mahabir Panda and Prasanta Kumar Bhuyan “Development of 3W-LOS Prediction Model for Urban Roadways using Adaptive Neuro Fuzzy Interface System” 16th World Conference on Transport Research (WCTR), Montreal, Canada, 17 to 21 July 2023.
2. Ashish Kumar Patnaik, Sambit Kumar Beura, Shibani Biswal and Prasanta Kumar Bhuyan” Development of Delay models and Assessment of LOS categories for Roundabouts in Indian Traffic Scenario” 16th World Conference on Transport Research (WCTR), Montreal, Canada, 17 to 21 July 2023.
3. Sambit Kumar Beura, Ashish Kumar Patnaik and Prasanta Kumar Bhuyan “Development of Artificial Intelligence-based Models for Bikeability Assessment at Unsignalized Intersections” 16th World Conference on Transport Research (WCTR), Montreal, Canada, 17 to 21 July 2023.
4. Sujeet Sahoo, Changati Sudha and Prasanta Kumar Bhuyan” Generalized Additive Models to assess Truck Driver’s Perceived LOS of Signalized Intersections” 16th World Conference on Transport Research (WCTR), Montreal, Canada, 17 to 21 July 2023.
5. Keval Joshi, Manisha Biswal and Prasanta Kumar Bhuyan” Critical Gap of Two-Wheeler in Heterogeneous Traffic: Comparing Occupancy-time Method and Raff’s Method” 16th World Conference on Transport Research (WCTR), Montreal, Canada, 17 to 21 July 2023.

Year 2022

6. S. Nayak, M. Panda, P. K. Bhuyan. " Delay Analysis of Motorized Three-Wheelers at Roundabout under Urban Indian Context ".", 15th Urban Mobility India (UMI) Conference and Expo 2022, 4-6 November 2022 at Kochi, Kerala. no.15, PP.10, Nov 2022
7. M. Biswal, P. K. Bhuyan. " Shapley Additive Explanation Method for Assessing Motorized Two-wheeler Level of Service at Signalized Intersection.". 15th Urban Mobility India (UMI) Conference and Expo 2022, 4-6 November 2022 at Kochi, Kerala. no.15, PP.8, Nov 2022
8. S. Sahoo, C. Sudha, P.K. Bhuyan. "Performance Analysis of Signalized Intersections from Truck Drivers’ Perspective ". 15th Urban Mobility India (UMI) Conference and Expo 2022, 4-6 November 2022 at Kochi, Kerala. no.15, PP.10, Nov 2022

Year 2020

9. S. Jena, A. Kumar, M. Dutta, P. K. Bhuyan. "Examining induced fuzziness in drivers' perception to determine urban street level of service". 13th TPMDC, Transportation Planning and Implementation Methodologies for Developing Countries, At: IITBombay,10-11, December 2020, Mumbai, India. no.13, Dec 2020
10. S. Sahoo, S. N. Mallick, P. K. Bhuyan "Acceleration and Deceleration Behaviour of Two-Wheelers on Flyovers using GPS". 13th International Conference, Transportation Planning and Implementation Methodologies for Developing Countries, 10-11 December 2020, IIT Bombay.

Year 2019

11. Kar, M., Jena, S., Chakraborty, A. and Bhuyan, P. K. (2019) "Modelling Service Quality Offered by Signalized Intersections from Automobile Users' Perspective", 15th World Conference on Transport Research, 26-31 May, IIT Bombay.
12. Beura, S. K., Vinod Kumar, Shakti, S., Panda, M. and Bhuyan, P. K. (2019) "Service Quality Analysis of Signalized Intersections from the Perspective of Bicycling", 15th World Conference on Transport Research, 26-31 May, IIT Bombay.
13. Beura, S. K. Haritha, C. and Bhuyan, P. K. (2019) "Bicycle Comfort Level Rating (BCLR) Model for Urban Street Segments in Developing Countries", 15th World Conference on Transport Research, 26-31 May, IIT Bombay.
14. Patnaik, A. K., Prashanth Kumar, D., Panda, M. and Bhuyan, P. K. (2019) "Entry Capacity Quantifying Model through Drivers' Behavior Analysis at Roundabouts", 15th World Conference on Transport Research, 26-31 May, IIT Bombay.
15. Patnaik, A. K., Patra, R. and Bhuyan, P. K. (2019) "Comparison of Artificial Intelligence Based Roundabout Entry Capacity Models", 15th World Conference on Transport Research, 26-31 May, IIT Bombay.
16. Sahani, R. and Bhuyan, P. K. (2019) "Modelling Pedestrian Perspectives in Evaluating Satisfaction Levels of Urban Roadway Walking Facilities", 15th World Conference on Transport Research, 26-31 May, IIT Bombay.
17. Jena, S., Kar, M. and Bhuyan, P. K. (2019); "Investigating performance of Signalized Intersections Operating under Mixed Traffic Condition", Transportation Research Board 98th Annual Meeting, January 13–17, 2019, Washington, D.C.

Year 2018

18. Beura, S.K., and Bhuyan, P. K. (2018); "Quality of Bicycle Traffic Management at Urban Road Links and Signalized Intersections Operating under Mixed Traffic Conditions", Transportation Research Board 97th Annual Meeting, January 7–11, 2018, Washington, D.C.
19. Jena, S., Chakraborty, A. Bhuyan, P. K. (2018); "Performance Assessment of Urban Streets Addressing Improvement Issues for Automobile Mode of Transport", Transportation Research Board 97th Annual Meeting, January 7–11, 2018, Washington, D.C.

20. Patnaik, A.K., Raj, A. and Bhuyan, P. K. (2018); “Investigating Entry Capacity Models of Roundabouts Under Heterogeneous Traffic Conditions”, Transportation Research Board 97th Annual Meeting, January 7–11, 2018, Washington, D.C.

Year 2017

21. Jena, S., Panda, M. and Bhuyan, P. K. (2017); Influence of Mix Parameters on Development of Sulfur Modified Bituminous Paving Mixes with Sand; International Congress and Exhibition "Sustainable Civil Infrastructures: Innovative Infrastructure Geotechnology"; Egypt
22. Barik, S., Panda, M. and Bhuyan, P. K. (2017); A Study on Use of Locally Available Moorum in Pavement Base and Sub-Base; International Conference on Highway Pavements and Airfield Technology; Philadelphia, Pennsylvania, USA.
23. Patnaik, A.K. and Bhuyan, P. K. (2017); “Delay models for Roundabouts under mixed Traffic flow Conditions in Developing Countries”, 4th International conference on transportation research group of India (CTRG 2017), 17 - 20 December, 2017, IIT Bombay, India
24. Beura, S.K., Manusha, L., Chellapilla, H. and Bhuyan, P. K. (2017); “Defining bicycle levels of service criteria using Levenberg-Marquardt and self-organizing map algorithms”, 4th International conference on transportation research group of India (CTRG 2017), 17 - 20 December, 2017, IIT Bombay, India
25. Jena, S., Chakraborty, A. and Bhuyan, P. K. (2017); “Determining urban street levels of service in developing cities: An effective solution for sustainability of automobile users”, 4th International conference on transportation research group of India (CTRG 2017), 17 - 20 December, 2017, IIT Bombay, India
26. Jena, S., Dholawala, H., Panda, M. and Bhuyan, P. K. (2017); “Assessment of induced fuzziness in passenger’s perspective of transit service quality: A sustainable approach for Indian transit scenario”, 4th International conference on transportation research group of India (CTRG 2017), 17 - 20 December, 2017, IIT Bombay, India
27. Sahani, R., Majji, S. and Bhuyan, P. K. (2017); “Application of gap acceptance concept to investigate crossing behavior of pedestrians at un-signalized intersections”, 4th International conference on transportation research group of India (CTRG 2017), 17 - 20 December, 2017, IIT Bombay, India
28. Beura, S. K. and Bhuyan, P. K. (2017); Modeling Quality of Bicycle Accommodations on Urban Road Segments Using Functional Networks and Multivariate Adaptive Regression Splines Techniques; Transportation Research Board’s 96th Annual Meeting, Washington D.C;20p

Year 2016

29. Jena S., Beura S.K. and Bhuyan, P. K. (2016); “Tangible Service Level Assessment of Urban Streets using Point System to Support Improvement Issues for Private Mode of Transport”, 12th PMDC, IIT Bombay; Paper Number-31
30. Beura, S.K., Kiran Kumar, N. and Bhuyan, P. K. (2016); “Level of Service for Bicycle Through Movement at Signalized Intersections under Heterogeneous Traffic Flow Conditions”, 12th TPMDC, IIT Bombay; Paper Number-113
31. Chellapilla, H. Beura, S. K. and Bhuyan, P. K. (2016) “Modelling Bicycle Activity on Multi-Lane Urban Road Segments in Indian Context and Prioritizing Bicycle Lane to Enhance the Operational Efficiency”, 12th TPMDC, IIT Bombay; Paper Number-165

32. Jena, S., Priyanka A. and Bhuyan, P.K. (2016); “Evaluating Service Criteria of Urban Streets in Developing Countries based on Road Users’ Perception”, 12th TPMDC, IIT Bombay; Paper Number-250
33. Rao, S., Krishna, Y. Priyanka, A. and Bhuyan, P. K. (2016); Calibrating Performance of Roundabouts Based on Gap Acceptance Parameters Using Simulation for Indian Scenario”, 12th TPMDC, IIT Bombay; Paper Number-83
34. Sahani, R., Praveena, D. and Bhuyan, P. K. (2016); “Use of Multinomial Logit Model in Evaluation of Service Levels of Pedestrian Facilities”, 12th TPMDC, IIT Bombay; Paper Number-85
35. Patnaik, A.K., Sahani, R., Sahoo, K. and Bhuyan, P. K. (2016); “Modelling Entry Capacity Reduction Factor of Roundabouts under the Influence of Pedestrians in Developing Countries”, 12th TPMDC, IIT Bombay; Paper Number- Paper Number-87.

Year 2015

36. Sahani, R. and Bhuyan, P.K. (2015); Modelling Pedestrian Perceptions to Define Service Criteria of Sidewalks; International Conference on Emerging Trends in Engineering and Technology Research (ICETTR); Bangalore, India.
37. Beura, S.K., Chellapilla, H. and Bhuyan (2015); Service Quality Assessment of Shared Use Road Segments: A Pedestrian Perspective” 2nd international conference on Intelligent computing and applications, Bangalore, India.
38. Jena, S., Priyanka, A. and Bhuyan, P.K. (2015); “Application of Fuzzy Inference System to Estimate Perceived LOS criteria of urban road segments” 2nd international conference on Intelligent computing and applications, Bangalore, India

Year 2014

39. Dutta, S. and Bhuyan, P.K. (2014); “Estimation of Critical Gap of U-turn Vehicles at Median Openings under Mixed traffic Condition” International Conference on Innovative Advancements in Engineering and Technology, Jaipur National University, Jagatpura, Jaipur, Rajasthan, India
40. Dutta, S. and Bhuyan, P.K. (2014); Which Method is Appropriate- INAFOGA or HARDERS for Critical Gap Estimation of U-turn Vehicles at Median Openings in Urban Indian Context? International Conference on Innovations in Civil engineering, SCMS School of Engineering and Technology, Ernakulam, Kerala, India
41. Datta, S. and bhuyan, P. K. (2014); Which Method is Appropriate-INAFOGA or PROBABILITY EQUILIBRIUM for Critical Gap Estimation of U-turn Vehicles at Median Openings in Urban Indian Context? International Conference on Advances in Engineering and Technology, 2014, At Roorkee, India
42. Sahani, R and Bhuyan, P.K (2014).; “Application of GA-Fuzzy Clustering for the Evaluation of Sustainable Pedestrian Facilities in Urban Indian Context”, ICSCI 2014, Hyderabad, India
43. Sahani, R and Bhuyan, P.K (2014); “Average Travel Speeds of Pedestrians on offstreet Facilities to Evaluate the Service Criteria in Urban Indian Context” TPMDC, IIT Bombay, India

Year 2013

44. Sahani, R and Bhuyan, P.K. (2013); “Level of Service Criteria of Urban Walking Environment in Indian Context” Symposium on Sustainable Infrastructure Development (SID), IIT Bhubaneswar

45. Sahani, R and Bhuyan, P. K. (2013) “Level of Service Criteria of off-street Pedestrian Facilities in Indian Context using Affinity Propagation Clustering” 2nd Conference of Transportation Research Group (CTRG) of India, Agra.

STUDENT GUIDANCE

Status	Ph.D.	M. Tech.	B. Tech.
Completed	4	95	18
On-going	8	5	2

DOCTORAL (Ph.D.) THESIS GUIDANCE

Roll No.	Student Name	Thesis Title / Research Area	Enrolment Date	Status	Defence Viva Date	Role
513CE 1010	Rima Sahani	Level of Service Criteria for Pedestrian Facilities in Urban Indian Context	04 Jul 2013	Graduated	06 Dec 2017	Supervisor
513CE 1011	Ashish Kumar Patnaik	Entry Capacity Modelling of Roundabouts Under Heterogeneous Traffic Flow Conditions	13 Nov 2013	Graduated	12 Dec 2018	Supervisor
513CE 1025	Suprava Jena	Performance Assessment of Urban Street Facilities Addressing Improvement Issues of Automobile Mode	06 Jan 2014	Graduated	24 Dec 2018	Supervisor
513CE 1063	Sambit Kumar Beura	Investigation and Modeling of Urban Street Bikeability from User’s Perspective	06 Jan 2014	Graduated	03 Dec 2018	Supervisor
518CE 1003	Manisha Biswal	Service Quality Assessment of Motorized Two-Wheelers in Urban Indian Context	24 Jul 2018	Ongoing	-	Supervisor
519CE 1004	Subhada Nayak	Performance Assessment of Urban Road Facilities Addressing Improvement Issues of Three-Wheeler Mode	29 Jul 2019	Ongoing	-	Supervisor
519CE 1005	Sujeet Sahoo	Truck Traffic Service Quality Assessment on Urban roads	29 Jul 2019	Ongoing	-	Supervisor
519CE 1009	Abinash Chandra Pal	Sustainable Development of Pavement Quality Concrete Using Copper Slag and Fly Ash	26 Jul 2019	Ongoing	-	Co-Supervisor
919CE 5004	Saroj Kumar Rajwar	Safety analysis and development of accident prediction models for road transportation in mines area	01 Jan 2020	Ongoing	-	Supervisor

Roll No.	Student Name	Thesis Title / Research Area	Enrolment Date	Status	Defence Viva Date	Role
919CE 5005	Sitansu Kumar Das	Performance Assessment of Toll Collection Systems in Indian Context	01 Jan 2020	Ongoing	-	Supervisor
920CE 5003	Majji Sai Priya	Enhancement of Public transportation network using GIS and Machine learning tools	04 Nov 2020	Ongoing	-	Supervisor
922CE 5003	Rahul Reddy Gade	Econometric analysis and safety studies of road accidents in India of road transportations	14 Sep 2022	Ongoing	-	Supervisor

MEMBERSHIP OF PROFESSIONAL BODIES

- Indian Road Congress (IRC)
- Institute of Urban Transport (IUT)
- Indian Science Congress Association (ISCA)
- Indian Society of Technical Education (ISTE)
- American Planner Association (APA, 2010-2011)
- World Conference on Transport Research Society (WCTRS; 2007-2010, 219-2023)
- Institute of Engineers, India (IEI)

SEMINAR/SHORT-TERM COURSES/ WORKSHOP CONDUCTED

- Short-Term courses on “Advances in Transportation Engineering (ATE)”, 23-27 Sept. 2020
- MHRD Sponsored GIAN course on “Freight Transportation Demand Modelling” 11-19 Dec. 2016

Signature with date