

Detailed Curriculum Vitae: Dr. Shriniwas S. Arkatkar



BIO-DATA

- 1.Name in full : Dr. SHRINIWAS SHRIKANT ARKATKAR
- 2.Father's Name : S/O SHRIKANT KONDOPANT ARKATKAR
- 3.Date of Birth : 15th November 1977
- 4.Nationality : Indian
- 5.Religion : Hindu
- 6.Address for Correspondence: Dr. SHRINIWAS SHRIKANT ARKATKAR
Assistant Professor, Civil Engineering Department,
Sardar Vallabhbhai National Institute of Technology ,
Surat (SVNIT, Surat), Ichachanath-395007, INDIA.
Email ID: sarkatkar@gmail.com,
sarkatkar@ced.svnit.ac.in, Ph: 0261-2201825(O),
0261-2201879 (R), Mobile: +918140252777
- 7.Permanent Address : Dr. SHRINIWAS SHRIKANT ARKATKAR
50,Nadanvan Colony
Behind Laxminarayan Temple
Nagpur-440009, Maharashtra, INDIA.
- 8.Category : Open
- 9.Gender : Male
- 10.Languages known : English, Marathi, Gujarati and Hindi.
- 11.Field of Specialization : Transportation Engineering and Planning (Civil Engg.)
- 12.Ph.D. Thesis Title: Estimation of Passenger Car Unit of Vehicles in Heterogeneous
Traffic on Intercity Roads using Micro- Simulation.
13. Publications:
 - Books (Monograph) : 02
 - Book Chapters : 01
 - Journal Publications : 38
 - Journal Papers under review : 07
 - Journal Papers under preparation : 05
 - International Conferences : 50
 - National Conferences : 29

14. Academic Profile:

Qualification	Year of Passing	University/Instituti on	Class	Percenta ge of Marks	Subjects
Ph.D.	2010	IIT Madras	-	9.10 CGPA	Mentioned Below
M.Tech.	2001	V.R.C.E., Nagpur (now VNIT, Nagpur)	Distinction (University Topper)	75.40 %	Mentioned on pages 5 and 6
B.E. (Civil)	1999	V.R.C.E., Nagpur	Distinction	76.48 %	Mentioned On page 6
H.S.S.C.	1995	Shri Shivaji Science college, Nagpur	Distinction	89.17 %	Physics, Chemistry, Mathematics & Electronics
S.S.C.	1993	Somalwar High School, Nagpur	Distinction	87.85 %	All State Board Subjects(M.S.)

15. Experience:

Name of Employer with Address	Post Held	Period of Service	Nature of Service
Civil Engineering Department SVNIT, Surat, Gujarat.	Assistant Professor	6.12.2013 to ongoing	PG/ UG Teaching, Research and consultancy
Civil Engineering Department BITS Pilani, Rajasthan.	Assistant Professor	1.5.2010 to 5.12.2013	PG/ UG Teaching, Research and consultancy
Civil Engineering Department BITS Pilani, Rajasthan.	Lecturer	5.12.2009 to 30.4.2010 (5 months)	PG/ UG Teaching, Research and consultancy
Department of Civil Engineering, IIT Madras	HTRA, Scholar	03.1.2005 to 23.11.2009	Teaching Assistance
Nirma Institute of Technology Ahmedabad-382 481, Gujarat.	Lecturer	22/6/2001 to 27/12/2004 (3 years and 6 months)	Teaching and Research at UG level.

15 A. Responsibilities at SVNIT Surat (Civil Engineering Department):

- Faculty in charge-Traffic Engineering and Simulation Laboratory
- Coordinator for Electives, Seminar and Projects
- Member, Purchase Committee for Transportation Engineering and Planning (TEP) section
- Member, PMGSY State Technical Agency (STA)
- Warden, BhabhaBhavan (H-1 Hostel) since January 2014.
- Member, Hostel Disciplinary committee.
- Member, Scrutiny Committee, Student Council Elections

15 B. Responsibilities at BITS Pilani (Civil Engineering Department):

- Member, PMGSY Principal Technical Agency (PTA)
- Coordinator, ME Transportation Program
- Faculty in charge-Transportation Engineering Laboratory
- Convener, Departmental Research Committee (DRC)
- Study of the existing speed-breakers at BITS, Pilani Campus
- Faculty Member for Practice School Division

15 C. Sponsored Research Projects at SVNIT Surat

1. Principal Investigator of ‘Study of traffic flow on Expressways’ Funded by DST under ‘Fast Track’ scheme (Rs. 25.10 lakhs). **Status : ongoing**
2. Co-Principal Investigator of the project on “Supra Institutional National Project : Development of Indo-Highway Capacity Manual: under twelfth five year plan to the CSIR - Central Road Research Institute (CRRI), New Delhi for the total outlay of Rs. 995.150 lakhs for the plan period of 2012-2017. **Status : ongoing**

15 D. Sponsored Research Projects at BITS Pilani

1. Principal Investigator of ‘Determining Composite Index to Measure the Perceived Inadequacy of Public Transportation in Jaipur’, funded by BITS Pilani under ‘Research Initiation Grant’ scheme. (Rs. 2 lakhs) **Status : Completed**
2. Co-Principal Investigator of ‘Impact of PMGSY Roads on Accessibility in Rural Areas’ funded by National Rural Roads Development Agency (NRRDA), Ministry of Rural Development, Government of India. (Rs. 22.5 lakhs) **Status : Completed**

15 E. Research Guidance (PhD) at SVNIT Surat

1. Manish Jain : Study of Traffic Flow Characteristics on Two-lane undivided Roads in India (in progress since January 2014)
2. Rupali Zope: Study of Sustainable Urban Transportation Systems in India (in progress since August 2014)
3. Pallav Kumar: Study of Traffic Flow Characteristics on Multilane Urban Roads in India (in progress since August 2014)
4. Avinash Choudhary: Study of Pedestrian Flow Characteristics on crosswalks at mid-block and intersections in India (in progress since January 2015)
5. Akhilesh Chepuri: Study of Travel Time Reliability on Bus Routes (in progress since August 2015)
6. Asir Khan: Study of Traffic Flow Characteristics at Roundabouts in India (in progress since August 2015)
7. Vasudevan N: (Registered in January 2016)

15 F. Research Guidance (M tech Dissertations) at SVNIT Surat

1. Jabeena M: Study On Mixed Traffic Flow Behaviour On Intercity Expressway: A Case Study Of Mahatma Gandhi Expressway July 2014
2. AmolWagh: Study on travel time reliability for a Metropolitan corridor: A Case Study July 2014
3. Asir Khan: Mixed Traffic Gap Acceptance Behavior At Four Legged Rotary Intersection July 2014
4. Prasad Hinukale: Study on Operating Speeds of Vehicles on Two-Lane Roads in Hilly Terrain, July 2014
5. Akhilesh Chepuri: Study of travel time variation and reliability for a fixed route A Case Study in Surat, August 2015
6. Rakesh Kulkarni Estimation of Saturation Flow at Signalized Intersections under Heterogeneous Traffic Conditions, August 2015
7. Nipjyoti Bharadwaj, Estimating Capacity and Level of Service Thresholds on Intercity Expressways: A case study of National Expressway-1, August 2015
8. K.A. Srinivasula Reddy: Evaluation of Safety by developing Proximal Safety Indicators at Un-signalized Intersection using Micro Simulation, August 2016
9. Jairam R “Real-Time Bus Travel Time Prediction Using GPS Based Historical Data”, Defended in July 2016.
10. S.S.V.V.N. SURYA NARAYANA RAJU, “Calibration Of Vehicle Following Models Using Trajectory Data Under Heterogeneous Traffic Conditions” Defended in July 2016.
11. Vinayraj V S “Study Of Pedestrian Flow Characteristics On Crosswalk At Midblock In India” Defended in July 2016.

15 G. Research Guidance (M tech and B tech Dissertations) at BITS Pilani

1. Subodh Kant Dubey: Route Choice Modeling using Fuzzy Logic, (ME Transportation) completed in 2011.
2. Nilesh Deshpande: Mapping of Accidents Using GIS in Pilani, (BE) completed in 2011.
3. Nitish Sharma: Study of Heterogeneous Traffic Flow Characteristics on two-lane roads; (BE) completed in 2010.
4. Balaji P.: Characteristics of Expreeways Bottlenecks Operating at Capacity, (METransportation) completed in 2012.
5. Nikhil Sumanth: Evaluation of Accessibility Index based on Equivalent Travel Times for a residential location in Jaipur city, (ME Transportation) completed in 2012.
6. Praveen Singh: Modelling Pedestrian Gap Acceptance Behaviour at Mid-Block Crosswalk, (ME Transportation) completed in 2012.

7. KartikeyaJha: Application of Traffic Forecasting Techniques for Projecting Vehicular Population in India (B.E.) completed in 2012.
8. Sagar Kurle: Study of Lane usage on Expressways: An Empirical Analysis completed in 2013.
9. Vijay Dhale: Study of Pedesrian Traffic Flow Characteristics on Sidewalks in India completed in 2013.
10. Ravikiran P: Modelling Traffic Flow on Indian Roads using Micro-simulation completed in 2013.
11. Manojpal Reddy Nagavelli: Development Of Real Optimal Bus Scheduling And Time – Table With Headway Control Model, completed in May 2013
12. Saurabh Ahuja: Simulating Bus Rapid Transit Systems on Indian Roads, completed in May 2013
13. Sukrit Narula: Methodology for Simulating Heterogeneous Traffic on Expressways in Developing Countries: A Case Study in India, completed in May 2013

16A. Subjects Taughtat BITS Pilani:

Sl. No.	Subject	PG/UG
1	Transportation System Planning and Management	M.E. (Transportation)
2	Traffic Flow Theory	M.E.(Transportation)
3	Urban Mass Transit Planning Operation and Management	M.E. (Transportation)
4	Research Practice in Traffic Engineering	M.E. (Transportation)
5	Traffic Engineering and Safety	M.E. (Transportation)
6	Transportation Economics	M.E. (Transportation)
7	Professional Practice in Traffic Engineering-I	M.E.(Transportation)
8	Pavement and analysis and Design	M.E.(Transportation)
9	Transportation Engineering	B. E. (Civil)

16B. Subjects Taught in Past: (Undergraduate Level)

Sl. No.	Year (UG)	Subject	No. of times
1	I Year:	Civil Engineering Graphics,	2
		C programming,	2
		C++ Programming	1
		Environmental Awareness and Education	1
2	II Year	Computer Applications,	2
		Building & Town Planning	2

3	III Year	Highway & Traffic Engineering	2
		Water Resources and Irrigation	2
4	IV Year	Quantity Surveying Estimation & Valuation,	2
		Docks and Harbors	2
		Site Project Work	1

17. Subjects opted in Ph.D. (Transportation Engineering):

Sl. No.	Course Name	Credits	Grade
1	Traffic Engineering and Management	4	S
2	Urban Transportation Planning	4	A
3	Traffic Flow theory	3	B
4	Transportation System Analysis	3	B
5	Computer Simulation	3	A
6	Probability and Statistics	3	B
7	Research Methodology	No Credits	Pass

18. Research Contributions (Ph.D.):

1. Data Collection for road traffic for varying roadway and traffic conditions in different parts of country such as Bangalore, Chennai, Pune, Mumbai on NH-45, NH-7, NH-4 etc.
2. The simulation model, named, HETEROSIM, was calibrated and validated using the collected traffic flow data pertaining to the National Highway stretches (part of prestigious project such as Golden Quadrilateral and North-South and East-West Corridor) in India.
3. The validated model was used to develop speed-flow relations, PCU estimates over wide range of traffic volumes for four-lane and six-lane divided roads. Dynamic nature of PCU values of different vehicles was studied with change in road width and degree of heterogeneity in traffic.
4. A framework for modeling traffic flow on grades was developed. The developed framework was incorporated in the simulation model, HETEROSIM, for studying the effect of upgrades on performance of vehicles in heterogeneous traffic conditions.
5. The validated model was used to develop speed-distance performance curves for different vehicle categories on grades varying from 2% to 6% under heterogeneous traffic conditions.
6. The model was used to develop speed-flow relations, PCU estimates over wide range of traffic volumes for four-lane divided roads with magnitude of upgrades varying from 2% to 6%. The effect of length of grade on PCU values of different vehicle categories was also studied.

7. Finally, all the PCU estimates were used to derive at capacity estimates for varying roadway conditions on divided intercity roads.

19. Subjects opted in M.Tech.(Urban Planning):

Theory & Environmental Planning, Planning Principles and Techniques, Housing & Community Planning, Traffic and Transportation Planning, Computer Applications and Statistical Methods, Architectural Design, Theory of Regional Planning, urban Design Techniques, Ecology and Resource Development, Urban Landscape Design, Economics of Urban Development, Development Plan of Kamptee Town.

19A. Thesis Research Work (M.Tech.):

“Zoning for Siting of Industries and environmentally Compatible Township at NandgaonPeth, Amravati”

The research work involves zoning and categorization of chemical industries based on the environmental factors by preparing certain thematic maps pertaining to Air, Water and Ground water Pollution, sensitive zones and Physical characteristics of region and study area as well. Research work also includes location and zoning of township and Chemical Industries based on the environmental considerations

19 B.Dissertation Work (M.Tech.):

“Analytical Study of IIM, Banglore Campus”

The dissertation work involves study of IIM, Bangalore Campus based on planning and campus design aspects for which four case studies were considered.

- Entrepreneurship Development Institute, Ahmedabad.
- National Insurance Academy, Baner (Pune)
- YASHADA, Pune
- Punjab University, Chandigarh.

Based on this comparison certain guidelines were evolved regarding campus planning and design in dissertation work.

Thesis and Dissertation Guide: Prof. V. S. Adane, Professor, Department of Architecture and Planning, VNIT, Nagpur.

20. Subjects opted in B. E. (Civil)

Theory of Structures, Structural Design, Irrigation Engineering, Transportation Engineering, Applied Remote Sensing, Pavement Design, Water Transmission and distribution systems.

20 A .Project Work Done in B.E.:

“Water Assessment Studies and Design of Distribution System for VRCE, Campus.”

The project involves assessment of water supplied through the water distribution system at VNIT, Nagpur, campus, in terms of quality and quantity. Further a design of water distribution system was done to check the adequacy of sizes of pipes in existing system.

Dissertation Guide: Dr. Rajesh Gupta, Professor and Head, Civil Engineering Department VNIT, Nagpur.

21. Invited Talks:

1. As a part of Half Time Research Assistant (HTRA), for the subjects ‘Traffic Flow Theory’ and ‘Traffic Engineering and Management’ few lectures were delivered to M. Tech. and B. Tech. classes at IIT Madras.
2. “Traffic Flow Measurement on Intercity Roads” to the Officials from various Highways and Transport Departments across the country in the workshops on “Road Transportation Planning (ROADTRAP)” organized at IIT Madras in November and February, 2009
3. “Modelling of Heterogeneous Traffic Flow on Upgrades of Intercity Roads” to the scientists from Central Road Research Institute (CSIR-CRRI) laboratory, New Delhi, India, on 16.01.2012.
4. “Modelling of Traffic Flow on Indian Expressways using Simulation Technique” in the PTV Germany (Sunovatech) User Group Meeting in New Delhi, India on 9-02-2012.
5. “Impact Assessment of Bus Rapid Transit under Heterogeneous Traffic Conditions.” to the students and faculties of Department of Architecture and Planning, Visvesvaraya National Institute of Technology Nagpur, India, on 13.2.2012.
6. “Analysis of Heterogeneous Traffic Flow Using Microscopic Simulation Technique” to the students and faculties of Department of Civil Engineering, in National Symposium at Gyan Ganga Institute of Technology,(GGCT) Jabalpur, India, on 17.3.2012.
7. “Time Gap Modelling under Mixed Traffic Conditions: A Statistical Analysis” to the participants in the National Conference and Workshop on ‘Recent Advances in traffic Engineering’ at SVNIT Surat, India, on 7.06.2012.
8. “Estimating Capacity for Eight-lane Divided Urban Expressway under Mixed-Traffic Conditions Using Computer Simulation” in the PTV Group (Sunovatech) User Group Meeting in New Delhi, India on 8-03-2013.
9. “Fundamentals of Traffic Flow Theory and Traffic Engineering Safety” in BITS Pilani Rajasthan on 3-5 August 2014.
10. “Effect of Speed Limit Compliance on Roadway Capacity of Indian Expressways” in 8th National Frontiers of Engineering at IIT Gandhinagar on 6th September, 2014.
11. “Measurement of Traffic Flow Characteristics at mid-block sections”Recent Advances in studies of Traffic Engineering (RASTE) 30th June to 11th July 2014

12. "Capacity and LoS Analysis at mid-block sections for different classes of roads"Recent Advances in studies of Traffic Engineering (RASTE) 30th June to 11th July 2014
13. "Fundamentals of Traffic Flow Modelling"Recent Advances in studies of Traffic Engineering (RASTE) 30th June to 11th July 2014
14. Laboratory Tests on Aggregates and Bitumen to PWD Engineers in PWD Diu and Daman on November 2014.
15. "Case Studies for Modeling Heterogeneous Traffic on Intercity roads using Micro-simulation" One Week TEQIP Sponsored FDP on "Recent Advances in Traffic Engineering and Transportation Planning (**RATE & TP**)" from 8th-13th December 2014, Malnad College of Engineering, Hassan, Karnataka
16. "Measurement of Traffic Flow Characteristics at mid-block sections" One Week TEQIP Sponsored FDP on "Recent Advances in Traffic Engineering and Transportation Planning (**RATE & TP**)" from 8th-13th December 2014, Malnad College of Engineering, Hassan, Karnataka
17. "Measurement of Traffic Flow Characteristics at mid-block sections"Recent Trends and Modern Practices in Transportation Engineering, on 16th December 2014 at Universal College of Engineering Kaman, Vasai, Mumbai.
18. "Measurement of Traffic Flow Characteristics at mid-block sections"Recent Trends and Modern Practices in Transportation Engineering, on 16th December 2014 at Universal College of Engineering Kaman, Vasai, Mumbai.
19. "Few Interesting Aspects in Transportation Engineering" MVJCE, Bangalore on 6th February 2015.
20. "Measurement of Traffic Flow Characteristics at mid-block sections and Signalized Intersections" AICTE Sponsored Short Term Course on Innovative Technologies in Transportation Engineering, 23-27 February, 2015 at IIT Guwahati
21. "Basic Aspects on Simulating Traffic Flow on Indian Roads" Gujarat Technical University Research Week on 8th April, 2015.
22. "Methodology for Simulating Heterogeneous Traffic on Expressways in Developing countries: A Case study in India, RATE-2015, 3-4th July 2015 at SVNIT Surat
23. "Performance of BRTS in Surat" Public Transportation issues and challenges in Surat, One Day workshop organized by IUT Gujarat-Rajasthan Chapter and SVNIT Surat on 1st August, 2015.
24. "Operational Analysis of Surat BRTS" Public Transport In Rajkot: Status And Challenges," One Day workshop organized by IUT Gujarat-Rajasthan Chapter and SVNIT Surat on 26th September, 2015.
25. "Walkability and User Perceptions, One Day Stakeholders Consultation", Workshop on Urban Transport Mobility & Walkability' Organised by Surat Municipal Corporation in collaboration with SVNIT Surat on 17-10-2015.

26. Effect of Driver's Compliance on Capacity of Roads, One week STTP on Construction and Road Safety Management, Organized by Civil Engineering Department, SVNIT Surat during 26-30 October 2015.
27. "Basics on Traffic Flow Analysis" at Universal College of Engineering Kaman, Vasai, Mumbai, on 22nd March 2016.
28. Simulation based Safety Assessment at Un-signalized Intersection in Surat, a two-day workshop on "ITS: Road Safety and Modeling" organized by Department of Civil Engineering, PDPU on March 29, 2016 at PDPU, Gandhinagar.
29. "Basics of Traffic Engineering and Management", at Civil Engineering Department, Gujarat Power Engineering and Research Institute, Mehsana (Gujarat) on 6th October, 2016
30. "Basics of Traffic Engineering and Management", at Civil Engineering Department, Gujarat Power Engineering and Research Institute, Mehsana (Gujarat) on 6th October, 2016
31. "Performance Evaluation of Surat BRTS: Few Case Studies" One Day workshop organized by Bhagwan Mahavir Education Foundation, Surat on Current Scenerio Of Public Transportation In Surat: Problems And Remedies on 7th October, 2016
32. "Basics on Traffic Flow Theory" at Nirma University, Department of Civil Engineering, Institute of Technology, on 13th October, 2016

21A. Laboratory Experience

i. Conducting laboratory courses:

- **Highway and Traffic Engineering laboratory**
 - Traffic volume count at mid-block and intersections
 - Speed measurement at mid-block and intersections
 - Vehicle arrival pattern and distribution
 - Headway measurement and distribution
 - Highway Material Tests

ii. Using different types of instruments, systems, computers etc.:

- Traffic data collection over wide range of roadway and traffic conditions using video camera
- Data extraction using Power DVD, AVIDMAX
- Microscopic traffic parameters using Global Position Systems
- Microscopic traffic parameters using Image Processing Techniques

22. Research Interests:

- Traffic Flow Modeling and Simulation
- Traffic Operation and Management, Data Collection
- Transportation Systems Planning, Design and Operation

- Public Transportation and Sustainable Transportation
- Road Safety and Simulation

23. Papers accepted for Publication International & National Journals:

2008

1. V. Thamizh Arasan and Shriniwas S. Arkatkar, “Simulating Passenger Car Unit for Vehicles in Heterogeneous Traffic” **Traffic Engineering and Control**, 2008, 49 (11), 436-440.
2. V. Thamizh Arasan and Shriniwas S. Arkatkar, “Enhancing the Accuracy of Estimation of Passenger Car Unit for Vehicles of Heterogeneous Traffic” **Highway Research Journal**, Indian Roads Congress, New Delhi, 2008, Issue no 1, 61-69. (This paper has been selected as the ‘Outstanding Research Paper’ by Indian Roads Congress in 2009. **IRC Best Paper Medal**)

2010

3. V. Thamizh Arasan and Shriniwas S. Arkatkar “Modelling of Heterogeneous Traffic Flow on Upgrades of Intercity Roads.” **Transport, Taylor and Francis Publication** 2010, 25(2), 129-137. doi: 10.3846 / transport.2010.16
4. V. Thamizh Arasan and Shriniwas S. Arkatkar “Micro-simulation Study of Effect of Volume and Road Width on PCU of Vehicles under Heterogeneous Traffic” **Journal of Transportation Engineering, ASCE**, 2010, 136(12), 1110-1119. doi:10.1061/(ASCE)TE.1943-5436.0000176
5. Shriniwas S. Arkatkar and V. Thamizh Arasan “Effect of Gradient and its Length on Performance of Vehicles under Heterogeneous Traffic Conditions” **Journal of Transportation Engineering, ASCE**, 2010, 136(12), 1120-1136. doi:10.1061/(ASCE)TE.1943-5436.0000177

2011

6. Nitish Sharma, Shriniwas S. Arkatkar and Ashoke K. Sarkar “Study of Heterogeneous Traffic Flow Characteristics on Two Lane Roads” **Transport, Taylor and Francis**, 2011, 26(2), 185-196. 10.3846/16484142.2011.593120. This paper has been contributed based on the B. Tech. dissertation guidance at BITS Pilani.
7. V. Thamizh Arasan and Shriniwas S. Arkatkar “Micro-simulation Study of Vehicular Interactions in Heterogeneous Traffic Flow on Intercity Roads” **Journal of European Transport**, 2011, 48, 1-29.
8. V. Thamizh Arasan and Shriniwas S. Arkatkar “Effect of Upgrade and its length on PCU of Vehicles in Heterogeneous Traffic” **Highway Research Journal**, Indian Roads Congress, New Delhi, 4(1), 2011, 51-68.
9. Balaji P, Shriniwas S Arkatkar and Anupam Singhal, “Impacts of Induced Travel on Indian Highway Projects: A Case Study” **International Journal of Earth Sciences and Engineering**, 4(6), 2011, 385-389. This paper has been contributed based on the M. Tech. term project guidance at BITS Pilani.
10. Deshpande Nilesh, Ishan Chanda and Shriniwas S Arkatkar, “Accident Mapping And Analysis Using Geographical Information Systems” **International Journal of Earth**

Sciences and Engineering, 4(6), 2011, 342-345. This paper has been contributed based on the B. Tech. dissertation guidance at BITS Pilani.

11. Shrinivas S Arkatkar, "Effect of Intercity Road Geometry on Capacity under Heterogeneous Traffic Conditions Using Microscopic Simulation Technique" **International Journal of Earth Sciences and Engineering**, 4(6), 2011, 375-380.

2012

12. Shrinivas S. Arkatkar and V. ThamizhArasan "Micro-simulation Study of Vehicular Interactions on Upgrades of Intercity Roads in Heterogeneous Traffic" **European Transport**, 2012, 52(3),1-33.
13. Subodh Kant Dubey, Balaji P. and Shrinivas S. Arkatkar "Time Gap Modeling under Mixed Traffic Conditions: A statistical Analysis" **Journal of Transportation System Engineering and Information Technology, Elsevier**,2012, 12(6), 25-34.

2013

14. KartikeyaJha, Nishita Sinha, Shrinivas S. Arkatkar and Ashoke Sarkar "Time Series Analysis of Traffic Data Using AADT Data from California, USA" **Modern Traffic and Transportation Engineering Research**, American V-King Scientific Publishing Limited, 2(1), 2013, 60-67.
15. Subodh Kant Dubey, Balaji P. and Shrinivas S. Arkatkar "Modeling Time Gap Modeling using Mixture Distributions under Mixed Traffic Conditions" **Journal of Transportation System Engineering and Information Technology, Elsevier**, 2013, 13(3), 91-98.
16. KartikeyaJha, Nishita Sinha, Shrinivas S. Arkatkar and Ashoke Sarkar "Modeling Growth Trend And Forecasting Techniques For Vehicular Population In India" **International Journal for Traffic and Transport Engineering**, 2013, 3(2), 139-158.
17. Ravi Puvvala, BalajiPonnu and Shrinivas S Arkatkar, "Derivation of Capacity Estimates for Urban Expressway Using Computer Simulation" **Indian Highways**, Indian Roads Congress, 2013, 41(4), 35-44.
18. Ravikiran P., Balaji P., Shrinivas Arkatkar and S. Velmurugan, "Estimating Capacity for Eight-lane Divided Urban Expressway under Mixed-Traffic Conditions Using Computer Simulation" **International Journal of Advances in Engineering Sciences and Applied Mathematics: Special Issue on Advanced Traffic and Transportation Systems**, Springer, 2013, 5(2-3), 177-194(DOI: 10.1007/s12572-013-0089-z)
19. Subodh Kant Dubey, Deval Mishra, **Shrinivas S Arkatkar**, AjitPratap Singh and Ashoke Kumar Sarkar, Route Choice Modelling Using Fuzzy logic and Adaptive Neuro-fuzzy, **Modern Traffic and Transportation Engineering Research**, American V-King Scientific Publishing Limited, 2013, 2(4), 11-19.
20. Shalini K. Umasankar, Shrinivas S Arkatkar, AjitPratap Singh and Ashole Kumar Sarkar, "Quantification of Level-of-Service Index for Bus Routes in Developing Countries: A Case Study in India" **Journal of Eastern Asia Society of Transportation Studies**, 2013, 10, 1347-1366

21. Behara, Krishna Nikhil Sumanth, **Arkatkar, Shrinivas S.**, and Sarkar, Ashoke Kumar, A Composite Index to Measure the Perceived Inadequacy of Public Transportation, **Institute of Urban Transport Journal**, 2013, 12(1), 28-35.

2015

22. Balaji P., SukritNarula, Shrinivas Arkatkar and S. Velmurugan, “Lane Usage, Following Behavior and Time Gap Models for a Multi-lane Freeway in India, **Transportation Letters: the International Journal of Transportation Research**. Taylor and Francis, 2015, 7(1), 14-23.
23. Jiten Shah, Gaurang Joshi, PurnimaParida, and Shrinivas Arkatkar, Impact of Train Schedule on Pedestrian Movement on Stairway at Suburban Rail Transit Station in Mumbai, India, **International Journal on Advances in Civil Engineering**, Hindawi Publication, 2015, 9 pages.
24. Balaji P., Rajesh Reddy, Deval Mishra, Shrinivas Arkatkar and Ashoke Sarkar, “Effect of Induced Traffic on Feasibility of Highway Projects using Economic Analysis: A Case Study in India, **Case Studies on Transport Policy- A supplementary Journal to Transport Policy**, Elsevier, 2015,3(3), 347-354
25. Shalini K. Umasankar, Ashoke Kumar Sarkar, AjitPratap Singh and Shrinivas S Arkatkar, Quantification of Accessibility to Health Facilities in Rural Areas, **Case Studies on Transport Policy- A supplementary Journal to Transport Policy**, Elsevier, 2015,3(3), 311-320.
26. Jabeena, M, Joshi, G. J., Arkatkar, S., Ravinder, K. “Traffic Characteristics Study Through Processing of Video Image For Expressway in India” Journal of Society of Traffic and Transportation Studies, 2015,6(2), 1-12
27. Jiten Shah, Gaurang Joshi, PurnimaParida, and Shrinivas Arkatkar, Analysis Of Commuter Flow Behaviour On Stairways At Metropolitan Transit Station In Mumbai, India, **International Journal for Traffic and Transport Engineering**, 2015, 5(4), 451-457.

2016

28. KartikeyaJha, Nishita Sinha, Shrinivas S. Arkatkar and Ashoke Sarkar (2016) “A Comparative Study on Application of Time Series Analysis for Forecasting Vehicular Population in India: Prospects and Limitations” **Current Science**, **110(3)**, **373-385**.
29. Nipjyoti B., Pallav Kumar, Shrinivas Arkatkar, AkhileshMaurya and Gaurang Joshi, (2016) “Traffic Data Analysis using Image Processing Technique on Delhi-Gurgaon Expressway”, **Current Science**, **110(5)**, **808-822**.
30. Shrinivas Arkatkar, S. Velmurugan, Ravikiran P., Balaji P. and SukritNarula “Methodology for Simulating Heterogeneous Traffic on Expressways in Developing Countries: A Case Study in India” **Transportation Letters: the International Journal of Transportation Research**. Taylor and Francis (Accepted for publication)
31. Jiten Shah, Gaurang Joshi, PurnimaParida, and Shrinivas Arkatkar, Effect of Stairway width on pedestrian Flow characteristics, **Transportation Letters: the**

International Journal of Transportation Research. Taylor and Francis (Accepted for publication)

32. Jiten Shah, Gaurang Joshi, Purnima Parida, and Shriniwas Arkatkar. (2016) “Determination of pedestrian level of service for undivided stairways at suburban rail station in developing countries” **Transportation Research Record (TRR)**, Transportation Research Board, (Accepted for Publication).
33. Mathew Sonu, Ashish Dhamaniya, Shriniwas Arkatkar and G J Joshi (2016) Time Occupancy as Measure of PCU at Four Legged Roundabouts, **Transportation Letters: the International Journal of Transportation Research**, Taylor and Francis (Accepted for publication)
34. Jiten Shah, Gaurang Joshi, Purnima Parida, and Shriniwas Arkatkar (2016) Effect of Directional Distribution on Stairway Capacity at Suburban Railway Station in India, **Transportation Letters: the International Journal of Transportation Research.** Taylor and Francis (Accepted for publication)
35. Jiten Shah, Gaurang Joshi, Purnima Parida, and Shriniwas Arkatkar (2016) Comparative Study of Macroscopic Pedestrian Flow Characteristics on Stairways at Rail Transit Stations, **Transportation in Developing Economies (TiDE), A Journal of the Transportation Research Group of India.** Springer (Accepted for publication)
36. Mishra Rajiv Ranjan, A Dhamaniya and S Arkatkar (2016) **Estimation of Capacity of Expressways in India using Dynamic PCU Value**, Urban Transport Journal, Institute of Urban Transport (India), 15(1), 93-102.
37. Rupali Zope, Shriniwas Arkatkar, Gaurang Joshi, Key Challenges to Urban Transport Sustainability: Case Study Of Indian Cities, Accepted for Publication in, **Urban Transport Journal, Institute of Urban Transport (India).**
38. Nipjyoti Bharadwaj, Mathew Sonu, Agnivesh Pani, Shriniwas Arkatkar, Gaurang Joshi and Kayitha Ravinder, Effect of Traffic Composition and Emergency Lane on Capacity: A Case Study of Intercity Expressway in India, **Transportation Letters: the International Journal of Transportation Research.** Taylor and Francis (Accepted for publication)
39. Srinivas Reddy, Akhilesh Chepuri, Shriniwas Arkatkar and Gaurang J. Joshi, Developing proximal safety indicators for assessment of un-signalized intersection - a case study in Surat, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016. **(Now Invited for special Issue in Transportation Letters International Journal of Transportation Research.** Taylor and Francis)
40. Mathew Sonu, Ashish Dhamaniya, Shriniwas Arkatkar and G J Joshi, Conceptual Approach of Estimating PCU at Roundabouts, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016. **(Now invited for special Issue in Transportation Letters International Journal of Transportation Research.** Taylor and Francis)

41. Akhilesh Chepuri, Sanskruti Joshi, Shriniwas Arkatkar, Gaurang Joshi and Ashish Bhaskar, Travel time reliability analysis of public transport system in India: A case study of bus routes in Mysore city, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016. (**Now invited for special Issue in Transportation Letters International Journal of Transportation Research.** Taylor and Francis)
42. Shah Jiten, Joshi Gaurang, Arkatkar Shriniwas and Parida Purnima, Estimation of free speed of pedestrians flow on stairways at busy suburb rail transit station in India, **Current Science, (Under Second Review)**
43. NipJyoti B., Pallav Kumar, Ajinkya Mane, Shriniwas Arkatkar, Ashish Bhaskar and Gaurang Joshi, Comparative evaluation of density estimation methods on different uninterrupted roadway facilities: Few case studied in India, **Transportation in Developing Economies, Springer (Under Second Review)**
44. A. Wagh, A. Chepuri, S. S. Arkatkar and G J Joshi, “Study of Travel Time Variability using Two-wheeler probed data: A case study of Urban Arterial in Surat.” Proceedings of Civil Engineering: Transport (**Under Second Review**).
45. Chaitrali Shirke, Nikhil Sumanth Shriniwas Arkatkar, Ashish Bhaskar Gaurang Joshi, Modelling Expressway Lane Utilisation And Lane Choice Behaviour: A Case Study On Delhi-Gurgaon Expressway, **Transportation Letters International Journal of Transportation Research (Under Second Review)**.
46. Pallav Kumar, Manraj S. Bains, Nipjyoti Bharadwaj, Shriniwas S. Arkatkar, Gaurang Joshi “Effect of driver compliance with varying traffic composition on roadway capacity of Expressways in India”. **Under Review in Current Science.**
47. Maulik Bagadia, Pallav Kumar, Shriniwas Arkatkar, Gaurang J. Joshi “Disaggregate Mixed Traffic Flow Characteristics and Headway Distribution Study for Urban Arterial Roads”. **Under Review (Journal of Indian Road Congress)**.
48. Nipjyoti Bharadwaj Jabeena, M, Joshi, G. J., Arkatkar, S., Ravinder, K. “Study of flow Characteristics and traffic stream modelling on Indian Expressway - A Case Study Of Mahatma Gandhi Expressway” **Under Review (Journal of Indian Road Congress)**.

23 A. Books

1. Shriniwas S. Arkatkar and V. Thamizh Arasan “Quantifying Traffic Flow on Intercity Roads: A Micro-Simulation Study of Heterogeneous Traffic Flow Characteristics” VDM Verlag Dr. Mueller Akt.ges.& Co.KG, Germany, May 2011.(**ISBN: 978-3-639-33817-1**)(**Research Monograph**)
2. Ashoke Sarkar, Shriniwas Arkatkar, Vinayak Rao and Indrajeet Ghosh, “Fundamentals of Transportation Systems: Highways, Railways, Airways and Waterways” for CBSE, May 2013, New Delhi.

23 B. Book Chapters

1. Shalini Kanuganti, Ajinkya S. Mane, Shriniwas S Arkatkar. “Road Accident Study and Analysis”, In: Medical Jurisprudence, Toxicology and Forensic Science for Classroom, Investigation and Court Room with Case Laws. (Dr. Deoskar A.S), All India Reporter Pvt. Ltd, India (2nd edition). 2013

24. Papers Presented in International Conferences:

2006 and before

1. Shriniwas S. Arkatkar, “*Role of Space Technology in Natural Disaster Management*” was presented & published in the proceedings of International Workshop on “*Earth System Processes Related to Gujarat Earthquake Using Space Technology*” held at **IIT Kanpur, India**, during 27-29 January-2003
2. V. ThamizhArasan&Shriniwas S. Arkatkar, “Study of the Effect of Heterogeneity of Traffic on Intercity Roadways Using Computer Simulation”, Proceedings of the international conference on, **Applications of Advanced Technology in Transportation**, August 13-16, 2006, **Chicago, USA**, pp 762-767.

2008

3. V. ThamizhArasan and Shriniwas S. Arkatkar, “Study of Vehicular Interaction in Heterogeneous Traffic Flow on Intercity Highways Using Computer Simulation” **20th European Modeling and Simulation Symposium**, September 17–19, 2008, **Italy**.
4. V. ThamizhArasan and Shriniwas S. Arkatkar, “Effect of Traffic Volume and Road Width on Passenger Car Unit Values of Vehicles Using Computer Simulation” International Conference on **Transportation Planning and Implementation Methodologies for Developing Countries**. Dec. 3–6, 2008, **IIT Bombay, India**.
5. V. ThamizhArasan and Shriniwas S. Arkatkar, “Study of Vehicular Interaction in Heterogeneous Traffic Flow on Intercity Highways Using Computer Simulation” **20th European Modeling and Simulation Symposium**, September 17–19, 2008, **Italy**.
6. V. ThamizhArasan and Shriniwas S. Arkatkar, “Effect of Traffic Volume and Road Width on Passenger Car Unit Values of Vehicles Using Computer Simulation” International Conference on **Transportation Planning and Implementation Methodologies for Developing Countries**. Dec. 3–6, 2008, **IIT Bombay, India**.
7. V. ThamizhArasan and Shriniwas S. Arkatkar , “*Estimating Passenger Car Unit for Vehicles of Heterogeneous Traffic Using Computer Simulation*” **87th Annual Transportation Research Board Meeting CD ROM**, TRB, National Research Council, **Washington, D. C., U.S.A.**, 2008, pp. 1-14.

2009

8. Shriniwas S. Arkatkar and V. Thamizh Arasan “Micro-Simulation Study of the Effect of Roadway Factors on Heterogeneous Traffic Flow on Intercity Roads”

International Scientific Conference on Mobility and Transport, 12 & 13 May 2009, Munich, Germany.

2010

9. V. ThamizhArasan and Shriniwas S. Arkatkar ,“Estimation of PCU of Vehicles in Heterogeneous Traffic on Upgrades of Intercity Roads Using Simulation Technique” **Conference on infrastructure, Sustainable Transportation and Urban Planning, October 18-20, 2010, IISc Bangalore, India.**

2011

10. V. ThamizhArasan and Shriniwas S. Arkatkar,“ Derivation of Capacity Standards for Intercity Roads Carrying Heterogeneous Traffic Using Computer Simulation”, 6th ISHC- **International Symposium on Highway Capacity and Quality of Service, June 28- July 1, 2011,Stockholm,Sweden.**
11. SubodhDubey and Shriniwas S. Arkatkar “Route Choice Modeling Using Fuzzy Logic and Logistic Regression Analysis” International Conference On Advances In Materials And Techniques For Infrastructure Development, NIT Calicut, 22-24 June, 2011.
12. Balaji P, Shriniwas S Arkatkar and Anupam Singhal, “Impacts of Induced Travel on Indian Highway Projects: A Case Study” International Conference on Advances in Civil Engineering, KL University, 21-23 October, 2011.
13. Deshpande Nilesh, IshanChanda and Shriniwas S Arkatkar, “Accident Mapping And Analysis Using Geographical Information Systems” International Conference on Advances in Civil Engineering, KL University, 21-23 October, 2011.
14. Shriniwas S Arkatkar, “Effect of Intercity Road Geometry on Capacity under Heterogeneous Traffic Conditions Using Microscopic Simulation Technique” International Conference on Advances in Civil Engineering, KL University, 21-23 October, 2011.
15. Balaji P, Subodh Kant Dubey and Shriniwas S Arkatkar, “Induced Traffic by Travel Cost Method: An Economic Case Study” 1st Conference of Transportation Research Group of India, 7-10 December, 2011.
16. Nilesh Deshpande and Shriniwas S Arkatkar, “Accident Mapping and Analysis Using Geographical Information Systems” 1st Conference of Transportation Research Group of India, 7-10 December, 2011.
17. Subodh Kant Dubey , Balaji P and Shriniwas S Arkatkar, “Modeling Time Headway using Mixture Model” 1st Conference of Transportation Research Group of India, 7-10 December, 2011.

18. Subodh Kant Dubey and Shriniwas S Arkatkar, “A Comparative study of Route Choice Modeling using Fuzzy logic and Adaptive Neuro-fuzzy” 1st Conference of Transportation Research Group of India, 7-10 December, 2011.

2012

19. Manraj Singh Bains, Balaji P., Shriniwas S Arkatkar “Modeling of Traffic Flow on Indian Expressways using Simulation Technique” 8th ICTTS- **Procedia Social and Behavioral Sciences, Elsevier**, 2012.
20. Behara, Krishna Nikhil Sumanth, Arkatkar, Shriniwas S., and Sarkar, Ashoke Kumar, “ Estimation of Extra Burden Perceived by Public Transport Users while Walking to and from Bus Stops in Jaipur”, **Proceedings of the TSE Silver Jubilee International Conference -10th TPMDC**, 12-14 December, 2012, IIT Bombay.
21. Umashankar S, ShaliniKanuganti, Arkatkar, Shriniwas S. and Sarkar, Ashoke Kumar “Assessment of Level-of-Service of City Buses in Jaipur Using Fuzzy Set Theory”, Proceedings of the TSE Silver Jubilee International Conference -10th TPMDC, 12-14 December, 2012, IIT Bombay.
22. KartikeyaJha, BalajiPonnu, Shriniwas S. Arkatkar, “Time Series Analysis: A Contemporary Approach to Traffic Volume Forecasting”, **Proceedings of the TSE Silver Jubilee International Conference -10th TPMDC**, 12-14 December, 2012, IIT Bombay.

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23. Shalini K. Umasankar, Shriniwas S Arkatkar, AjitPratap Singh and Ashole Kumar Sarkar, “Quantification of Level-of-Service Index for Bus Routes in Developing Countries: A Case Study in India” 10th International Conference of Eastern Asia Society of Transportation Studies at Taipei.
24. Balaji P, Subodh Kant Dubey, Shriniwas S Arkatkar and Ashoke Kumar Sarkar, “Impact Assessment of Induced Traffic on Feasibility of Highway Projects” 10th International Conference of Eastern Asia Society of Transportation Studies at Taipei.
25. Manraj Singh Bains, Anshuman Bhardwaj, Shriniwas Arkatkar, and S. Velmurugan, Effect of Speed Limit Compliance on Roadway Capacity of Indian Expressways, **Procedia Social and Behavioral Sciences, Elsevier**.
26. RajendraPrasada, ShaliniKanuganti, Pooja N. Bhanegaonkar, Ashoke Kumar Sarkar, Shriniwas Arkatkar, Development of Relationship between Roughness (IRI) and Visible Surface Distresses: A Study on PMGSY Roads, **Procedia Social and Behavioral Sciences, Elsevier**.
27. Makrand Wagale, Ajit Pratap Singh, Ashoke K. Sarkar and Shriniwas Arkatkar, Real-Time Optimal Bus Scheduling for a City using A DTR Model,**Procedia Social and Behavioral Sciences, Elsevier**.

2014

28. Shrinivas Arkatkar, S. Velmurugan, Ravikiran P., Balaji P. and SukritNarula “Methodology for Simulating Heterogeneous Traffic on Expressways in Developing Countries: A Case Study in India” Accepted for presentation in the **93rd Annual Transportation Research Board (TRB) meeting** at Washington DC, USA, January 12-16, 2014
29. Jabeena, M, Joshi, G. J., Arkatkar, S., Ravinder, K. “Traffic Characteristics Study Through Processing of Video Image For Expressway in India” 9th Asia Pacific Conference on Transportation and the Environment, Colombo during 6-8 the August 2014
30. Rushikesh Amrutsamanvar, Ravi Sekhar Chalumuri, Gaurang Joshi and Shrinivas Arkatkar “Relation between travel time reliability and space mean speed for mixed traffic conditions - a case study of urban road corridors in India,**11th TPMDC**Transportation Planning and Implementation Methodologies for Developing Countries 10-12 December 2014, IIT Bombay
31. Ajinkya Mane, Pallavkumar, Shrinivas Arkatkar, Ashish Bhaskar and Gaurang Joshi Comparative evaluation of the density estimation models on Indian Expressway,**11th TPMDC**Transportation Planning and Implementation Methodologies for Developing Countries 10-12 December 2014, IIT Bombay
32. Sagar Kurle, Krishna N. S. Behara, Rajendra Prasad J., Shrinivas Arkatkar, Ashoke Kumar Sarkar Study of lane utilization on urban expressways- a case of Delhi-Gurgaon expressway, **11th TPMDC**Transportation Planning and Implementation Methodologies for Developing Countries 10-12 December 2014, IIT Bombay

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33. Jiten Shah, G J Joshi, P. Parida and S. Arkatkar, “Empirical Study of Bidirectional Movement on Stairway at a Suburban Railway Station in India” Accepted for presentation in the 94rd Annual Transportation Research Board (TRB) meeting at Washington DC, USA, January 11-15, 2015.
34. Ajinkya S. Mane, Ashoke Kumar Sarkar and Shrinivas S. Arkatkar “Study of 1 Modal Shift to Bus Rapid Transit (BRT) In Developing Country: A Case Study in India” Accepted for presentation in the 94rd Annual Transportation Research Board (TRB) meeting at Washington DC, USA, January 11-15, 2015.
35. Akhilesh CHEPURI, RakeshKulakarni, Manraj Singh Bains, Shrinivas Arkatkar, Guarang Joshi, “**Evaluation of BRTS Corridor in India Using Microscopic Simulation: A Case Study in Surat City**” 11th International Conference of Eastern Asia Society of Transportation Studies at Cebu, Philippines.
36. Manish jain, S S Arkatkar and Joshi, G. J “Studying Effect of Weight-To-Power Ratio on Acceleration Profile of Trucks under Varying Gradient Conditions” 11th International Conference of Eastern Asia Society of Transportation Studies at Cebu, Philippines.
37. Jabeena, M, Joshi, G. J., Arkatkar, S., Ravinder, K. “Study of flow Characteristics and traffic stream modelling on Indian Expressway - A Case Study Of Mahatma

Gandhi Expressway” 11th International Conference of Eastern Asia Society of Transportation Studies at Cebu, Philippines.

38. NipJyoti B., Pallav Kumar, Ajinkya Mane, Shriniwas Arkatkar, Ashish Bhaskar and Gaurang Joshi, Comparative evaluation of density estimation methods on different uninterrupted roadway facilities: Few case studied in India, 3rd CTRG at Kolkata, 17-20 December, 2015
39. Prasad H, A. Mane, S. Arkatkar, G. Joshi, Study of Operating speeds on two-lane hilly roads in India, 3rd CTRG at Kolkata, 17-19 December 2015
40. A. Wagh, A. Chepuri, S. S. Arkatkar and G J Joshi, “Study of Travel Time Variability using Two-wheeler probed data: A case study of Urban Arterial in Surat.” 3rd CTRG at Kolkata, 17-19 December 2015
41. Maulik Bagadiya, Shriniwas Arkatkar and Gaurang Joshi, “Disaggregate Mixed Traffic Flow Characteristics and Headway Distribution Study for Multilane Metropolitan Arterials”, 3rd CTRG at Kolkata, 17-19 December 2015

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42. Jiten Shah, Gaurang Joshi, PurnimaParida, and Shriniwas Arkatkar. (2016) “Determination of pedestrian level of service for undivided stairways at suburban rail station in developing countries” Transportation Research Record (TRR), Transportation Research Board, Jan-2016.
43. Mannilthodi Jabeena, Mathew Sonu, Shriniwas Arkatkar, Gaurang Joshi and KayithaRavinder, Effect of Traffic Composition and Emergency Lane on Capacity: A Case Study of Intercity Expressway in India, 14th World Conference on Transport Research, Tongji University, Shanghai, China, during 10-15 July 2016.
44. Akhilesh Chepuri, Sanskruti Joshi, Shriniwas Arkatkar, Gaurang Joshi and Ashish Bhaskar, Travel time reliability analysis of public transport system in India: A case study of bus routes in Mysore city, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016.
45. Vasudevan N., Shriniwas S. Arkatkar and Gaurang J. Joshi, Travel demand elasticity analysis for non-voluntary purpose trips by heterogeneous travellers in Indian metropolitan city, Surat, 14th World Conference on Transport Research, Tongji University, Shanghai, China, during 10-15 July 2016.
46. Shah Jiten, Joshi Gaurang, Arkatkar Shriniwas and ParidaPurnima, Estimation of free speed of pedestrians flow on stairways at busy suburb rail transit station in India, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016.
47. Chaitrali Shirke, G. J. Joshi, V. Kandala and S. S. Arkatkar, Transit Oriented Development and Its Effect on Mode Choice Behaviour of People: A Case Study of Mumbai Metro Line – I, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016.
48. Srinivas Reddy, AkhileshChepuri, Shriniwas Arkatkar and Gaurang J. Joshi, Developing proximal safety indicators for assessment of un-signalized intersection - a case study in Surat, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016.

49. Manraj Singh Bains, Pallav Kumar, NipjyotiBharadwaj and Shriniwas Arkatkar, Effect of Speed Limit Compliance on Roadway Capacity of Expressways in India: A case study of Delhi-Gurgaon Expressway, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016.
50. Mathew Sonu, Ashish Dhamaniya, Shriniwas Arkatkar and G J Joshi, Conceptual Approach of Estimating PCU at Roundabouts, 14th World Conference on Transport Research, Tongji University, Shanghai, China during 10-15 July 2016.
51. Jiten H. Shah, Gaurang J. Joshi, Shriniwas S. Arkatkar, Manoranjan Parida, Impact Of Human Factors And Functional Characteristics Of Location On Walking Speed At Stairway Facility, Accepted for presentation in the 96th Annual Transportation Research Board (TRB) meeting at Washington DC, USA, January 8-12, 2017.
52. Narayana Raju, Pallav Kumar, AkhileshChepuri, Shriniwas S. Arkatkar, Gaurang Joshi, Calibration Of Vehicle Following Models Using Trajectory 2 Data Under Heterogeneous Traffic Conditions, Accepted for presentation in the 96th Annual Transportation Research Board (TRB) meeting at Washington DC, USA, January 8-12, 2017.
53. Avinash R. Chaudhari, Jiten H. Shah, Shriniwas S. Arkatkar, Gaurang J. Joshi, ManoranjanParida, Examining Effect Of Individual Characteristics On Walking Speed At Un-Signalized Mid-Block Crossings, Accepted for presentation in the 96th Annual Transportation Research Board (TRB) meeting at Washington DC, USA, January 8-12, 2017.
54. Pallav Kumar, Krishnanunni, Shriniwas S. Arkatkar, Gaurang J. Joshi, Examining Microscopic And Macroscopic Traffic Flow Parameters At Diverging Section On Multilane Urban Roads In India, Accepted for presentation in the 96th Annual Transportation Research Board (TRB) meeting at Washington DC, USA January 8-12, 2017.
55. Pallav Kumar, Shriniwas S. Arkatkar, Gaurang J. Joshi, Ashish Dhamaniya, NEW METHODOLOGY FOR ESTIMATING PCU ON MULTI LANE URBAN ROADS UNDER MIXED TRAFFIC SCENARIO BASED ON AREA OCCUPANCY, Accepted for presentation in the 96th Annual Transportation Research Board (TRB) meeting at Washington DC, USA January 8-12, 2017.
56. Raunak Mishra, Pallav Kumar, Shriniwas S. Arkatkar, Ashoke Kumar Sarkar, Gaurang J. Joshi, Novel Area Occupancy Based Methodology For PCU Estimation On Multilane Urban Roads Under Heterogeneous Traffic Scenario, Accepted for presentation in the 96th Annual Transportation Research Board (TRB) meeting at Washington DC, USA January 8-12, 2017.
57. Manraj Singh Bains, Shriniwas Arkatkar, K S Anbumani, Siva Subramaniam, OPTIMIZING/MODELLING TOLL WAY OPERATION USING MICRO SIMULATION: CASE STUDY SANAND TOLL PLAZA, AHMEDABAD, GUJRAT, INDIA, Accepted for presentation in the 96th Annual Transportation Research Board (TRB) meeting at Washington DC, USA January 8-12, 2017.

24A. Papers Presented at National Conference

2016

1. Aathira K Das., Vinayaraj V S Nivedita Khoker, Sriniwas S Arkatkar and G.J. Goshi Operational analysis of Surat BRTS Phase- I, Stage-II corridor, RACE-16 at SVNIT, Surat, 2016.

2015

2. Mathew Sonu, Ashish Dhamaniya , Shriniwas Arkatkar, Gaurang JOSHI, Time Occupancy as Measure of PCU for Roundabouts, RATE15 at SVNIT, Surat, 2015.
3. Krishnanunni M., Agnivesh P, Pallav Kumar, Gaurang J. Joshi, Shriniwas S. Arkatkar,
Mixed Traffic Flow Characteristics at Diverging Section on Delhi-Gurgaon Expressway, RATE15 at SVNIT, Surat, 2015.
4. ChaitraliShirke, Shriniwas Arkatkar, Gaurang Joshi, Study of Lane Choice Behavior of Different Vehicle Classes on Delhi-Gurgaon Expressway, RATE15 at SVNIT, Surat, 2015.
5. Zope Rupali, Arkatkar S., Joshi G. J., "Smart and Sustainable Mobility Solution in Urban Areas:A comparative study and proposed research framework", National Conference of Sustainable and Smart Cities (SSC-15), SVNIT, Surat, P 51-59, 2015.
6. ShirkeChaitrali, G. J. Joshi, Vijaya Lakshmi Kandala, Shriniwas Arkatkar, Raghu Naik " Overview of smart city concept and its implementation in India" National Conference on Sustainable & Smart Cities -2015 (SSC-15), CED, NIT Surat, India,2015

2014

7. Jabeena, M, Joshi, G. J., Arkatkar, S., Ravinder, K. "Study On Traffic Characteristics On Expressway - A Case Study Of Mahatma Gandhi Expressway" Colloquium on Transportation Systems Engineering and Management CTR, CED, NIT Calicut, India, 2014
8. AmolWagh, Joshi, G. J., "Study On Travel Time Reliability Indices For An Arterial Road In Surat City" Colloquium on Transportation Systems Engineering and Management CTR, CED, NIT Calicut, India, 2014
9. Jiten Shah, Joshi, G. J, PurnimaParida and S S Arkatkar "Pedestrian Flow Behavior Analysis For Stairway At Busy Suburban Rail Transit Station In India" Colloquium on Transportation Systems Engineering and Management CTR, CED, NIT Calicut, India, 2014
10. Manish Jain, S S Arkatkar and Joshi, G. J "Effect of road gradient on truck acceleration characteristic using mechanistic approach"Colloquium on Transportation Systems Engineering and Management CTR, CED, NIT Calicut, India, 2014

2013

11. Vijay Dhale and Shriniwas Arkatkar, "Empirical Study of Pedestrian Flow Characteristics in India" 6th Research Symposium on Urban Mobility India, Institute of Urban Transport, 2013.

2012

12. Behara, Krishna Nikhil Sumanth, Arkatkar, Shriniwas S., and Sarkar, Ashoke Kumar,A Composite Index to Measure the Perceived Inadequacy of Public

Transportation, 5th Research Symposium on Urban Mobility India, Institute of Urban Transport, 2012.

13. JhaKartikeya and Shriniwas Arkatkar “Univariate Time Series Modeling for Traffic Volume Estimation” Proceedings of the National Conference on “National Conference on Urban Mobility-Challenges, Solutions and Prospects, IIT Madras July 13-14, 2012.
14. BalajiPonnu, RavikiranPuvvala and Shriniwas Arkatkar “Traffic Flow Modeling of the Delhi Gurgaon Expressway- An Empirical and a Simulation Approach” Proceedings of the National Conference on “National Conference on "Urban Mobility - Challenges, Solutions and Prospects", IIT Madras July 13-14, 2012.
15. JhaKartikeya and Shriniwas Arkatkar “Traffic Forecasting Techniques for Projecting Vehicular Population in India” Proceedings of the National Conference and workshop on “Recent Advances in Traffic Engineering” at SVNIT Surat, India, June 7-9, 2012.
16. Singh Praveen, Gowda K.S., Arkatkar S.S. and Sarkar A.K. “Pedestrian gap acceptance behaviour analysis At midblock sections” Proceedings of the National Conference and workshop on “Recent Advances in Traffic Engineering” at SVNIT Surat, India June 7-9, 2012.

2009 and Before

17. Shriniwas S. Arkatkar “Analysis of Heterogeneous Traffic Flow Using Microscopic Simulation Technique” National Symposium on Innovations and Advances in civil Engineering, March 16-17, 2012, GGCT, Jabalpur, India, 29-40.
2009
18. Shriniwas S. Arkatkar and V. ThamizhArasan “Simulation of Heterogeneous Traffic Flow for Developing Capacity Guidelines for Intercity Roads” **Student Symposium on Research in Civil Engineering.** March 5–6, 2009, **IIT Madras, India – (Best Paper Award).**
19. V. Thamizh Arasan and Shriniwas S. Arkatkar, “*Effect of Gradient on Vehicles of Heterogeneous Traffic on Intercity Roads*” National Conference on **Sustainable Urban Transportation: Issues and Management Strategies** at **SV National Institute of Technology, Surat**, during 28-29 December 2007, pp. II1-7.
20. V. Thamizh Arasan and Shriniwas S. Arkatkar , “*Capacity Standards for Intercity Roads*” National Workshop on **Characterisation of Urban Road Traffic, IIT Madras, Chennai, India**, 9-10 March, 2007 pp 47-62.
21. V. Thamizh Arasan and Shriniwas S. Arkatkar, “*Study of Heterogeneity of traffic on High Speed Roadways Using Computer Simulation*“ was published in the proceedings of a National Seminar on “**High Speed Road Corridors**” held at New Delhi, Organized by **Indian Roads Congress**, during 23-24 September 2005.
22. Shriniwas S. Arkatkar, “*Environmental Planning as a Tool GIS-A Paradigm Shift*” was published in the proceedings of a National Seminar on “**Urban Environmental Management**” held at **PeriyarManiammai College of Technology for Women**, during 10-11 February 2003
23. Shriniwas S. Arkatkar, “*Flood & storm water management in urban areas: need for retrofitting approach* ” was published in the proceedings of a National Seminar on

- “Urban Environmental Management”*** held at **PeriyarManiammai College of Technology** for Women, during 10-11 February 2003
24. Shrinivas S. Arkatkar, *“Environmental Planning as a Tool Through RS and GIS-A case Study”* was published in the proceedings of a National Seminar on ***“Industrial pollution Control & Environmental Management”*** held at **SV university, Tirupati**, during 22-23 November-2002.
 25. Shrinivas S. Arkatkar, *“Applications of Geomatics in urban planning”* was presented & published in the proceedings of a National Conference on ***“GEOMATICS-2002”*** held at Bharthidasan University, **Tiruchirrapalli**, during 18-20 September 2002.
 26. Shrinivas S. Arkatkar & Santosh S. Kolte, *“Industrial Pollution Control by Preparation of Industrial Zoning Atlas”* was presented & published in the proceedings of a National Seminar on ***“Pollution Prevention and Control in India”*** held at **VNIT, Nagpur**, during 2-3 March 2002.
 27. Santosh S. Kolte&Shrinivas S. Arkatkar, *“Prevention of Natural Water Pollution by Utilization and Reuse of Industrial Effluents-A Case Study”* was presented & published in the proceedings of a National Seminar on ***“Pollution Prevention and Control in India”*** held at **VNIT, Nagpur**, during 2-3 March 2002.
 28. Shrinivas S. Arkatkar &Anurag A. Kandya, *“GIS & its Environmental Applications”* was presented & published in the proceedings of a National Seminar on ***“Industrial Pollution and Environmental Degradation”*** held at **PSG College of Technology, Coimbatore** during 14-15 September 2001.
 29. Anurag A. Kandya&Shrinivas S. Arkatkar, *“Natural Resource Management with Remote Sensing Techniques”* was presented & published in the proceedings of a National Seminar on ***“Industrial Pollution and Environmental Degradation”*** held at **PSG College of Technology, Coimbatore** during 14-15 September 2001.

24 B. Reviewer for the following Journals and Organization

1. Journal of Transportation Engineering, ASCE.
2. Transportation Research Part A, Elsevier.
3. European Transport Research Review- An Open Access Journal, Springer.
4. Transport, Taylor and Francis
5. European Transport
6. International Journal of Civil and Architecture, David Publishing House, USA
7. NPTEL, IIT Madras
8. International Journal of Advances in Engineering Sciences and Applied Mathematics
9. Proceedings of EASTS
10. Transportation Letters
11. Case Studies in Transport Policy, Elsevier.
12. Transportation in Developing Economies, Springer
13. Journal of Intelligent Transportation Systems: Technology, Planning, and Operations (Taylor and Francis)
14. **Journal of Traffic and Transportation Engineering, Elsevier**

24 C. Editorial Board Member

1. Modern Traffic and Transportation Engineering Research
2. International Journal of Traffic and Transport Engineering
3. Guest Editor for a special issue in Transportation Letters

25. International Conferences Attended For Presenting Paper in Other Countries

1. Applications of Advanced Technology in Transportation, August 13-16, 2006, Chicago, **USA**, oral presentation.
2. 20th European Modeling and Simulation Symposium, September 17–19, 2008, Campora-San-Giovaani, Amantea, **Italy** - oral presentation.
3. International Scientific Conference on Mobility and Transport, 12 & 13 May 2009, Munich, **Germany** oral presentation.
4. 10th Eastern Asia Society for Transportation Studies (EASTS) conference, 9-12, September 2013 at Taipei, **Taiwan**- oral presentation.
5. 94th TRB Annual Meeting 11-15 January, 2015 in **USA**.
6. 11th EASTS conference 11-15 September, 2015 in **Philippines**.
7. 95th TRB Annual Meeting 10-14 January, 2016 in **USA**.

26. Team Member of Organising Committee for the Events at IIT Madras:

1. National Workshop on, "Characterization of Urban Road Traffic" March 9-10, 2007
2. "Recent Advances in Transportation Engineering" held at IIT Madras during 10-12, January, 2007.
3. "Road Transportation Planning (ROADTRAP)" workshops organized at IIT Madras in November and February, 2009.
4. "Sustainable Urban Transport Planning" workshop organized at IIT Madras during 24-28, August 2009.

27. Consultancy Projects at SVNIT Surat, BITS Pilani and IIT Madras:

1. Traffic Impact Study for Major Star-Hotel & Commercial Complex, ITC Limited.
2. Quality Checking of Pavement Works of National Highway, National Highways Authority of India.
3. Feasibility Study for Elevated Corridor in Tirupati, Municipal Corporation, Tirupati.
4. Scrutiny of DPRs for PMGSY roads in the State of Rajasthan, Government of India

5. Member, National Quality Monitoring Committee for PMGSY Roads at NRRDA, New Delhi.
6. Road Safety Audit for NH-11 (National Highway Authority of India)
7. Third Party Inspection and quality monitoring of roads constructed, repaired by Surat Municipal Corporation (Since July 2014)
8. Third Party Inspection and quality monitoring of construction of road from Kirit Oil mill to near check post via Hindu Crematorium at Ghoghala, Diu. (Since Feb, 2014)
9. Third Party Inspection and quality monitoring of construction of Surface Course of Nagoa Road, Diu. (Since January 2015)
10. Third Party Inspection and quality monitoring of roads constructed, repaired by Surat Urban Development Authority (SUDA) (Since January 2015)
11. Third Party Inspection and quality monitoring of approach roads constructed, for Tad Bridge in Diu (Since March 2015)
12. Professional services for Design and estimation of ONGC road from Muler to GGS-V in Gandhar field (7.2 km)
13. Professional services for Design Olpad-Surat State Highway (20 km)
14. Professional services for layer wise investigation of road failure for Pali-Beawar NH section for L & T IDPL.
15. Road Safety Audit and Quality Assurance for PMGSY roads in Surat Panchayat, Roads and Building Department of Government of Gujarat.
16. Professional services for Feasibility of Commissioning of Truck Parking Lot at Kandla Port Trust (KPT)
17. Professional services for Design and estimation of ONGC road at Hazira (2.2 km)
18. Professional services for Preparing a Design Manual for Surat City-Surat Municipal Corporation (SMC) – Preparation of templates for mid-block and intersections for consistent street planning and design practices in Surat city
19. Road Safety Audit and Quality Assurance for State Highways and Major District Roads in Surat Circle PWD, Roads and Building Department of Government of Gujarat.

28. Awards and Recognitions

1. Achieved first rank in M. Tech. (Urban Planning) course, Visvesvaraya Regional College of Engineering, Nagpur, Maharashtra, in all the semesters.

2. Received Indian Roads Congress Medal for outstanding paper on Road Research sponsored by Bihar PWD. Paper Title- Enhancing the Accuracy of Estimation of Passenger Car Unit for Vehicles of Heterogeneous Traffic, published in Highway Research Journal.
3. Received Indian Roads Congress Commendation Certificate for Paper Title- Effect of Upgrade and its length on PCU of Vehicles in Heterogeneous Traffic, published in Highway Research Journal.
4. Received 'Best Paper Award' in the Student Symposium on Research in Civil Engineering (SSRCE-09). March 5–6, 2009, IIT Madras, India.

49. Short Term Courses/Workshops/Programmes Organized:

1. Co-coordinated a major event ROBOCON-04, while working as the lecturer, in Department of Civil Engineering, Institute of Technology, Nirma University, Ahmedabad, Gujarat. It's an event at National level in the field of automation and robotics to select the best team for representing India, at Asia-Pacific level in 2004.
2. Co-coordinated a two-day National seminar on "Sustainable Transportation System Planning" during 21-22 March 2002 organised by Civil Engineering Department, Nirma Institute of Technology, Ahmedabad.
3. Co-coordinated a Six-day Continuing Education Programme on "Applications of RS & GIS In Civil Engineering" during 12-17 August 2002 organised by Civil Engineering Department, Nirma Institute of Technology, Ahmedabad.
4. Coordinating a two weeks Short Term Training Program on "Recent advances in Studies of Traffic Engineering" during 30th June to 11th July 2014, organized by Civil Engineering Department, SVNIT Surat.
5. Coordinated one-day workshop on "Macroscopic Pedestrian Flow Modeling" at SVNIT Surat on 28th June 2014.
6. Coordinated a Five-Days self Sponsored Program on "VISSIM Micro-simulation Software Training" during 23-27 March 2015 at SVNIT Surat.

29A.Short Term Courses Attended:

1. Attended Indo-US Workshop on "Recent Advances in Transportation Engineering" held at IIT Madras during 10-12, January, 2007.
2. Attended the five-day workshop on "Road Transportation Planning" held at IIT Madras in February, November, 2008.
3. Attended the two-day seminar on "Urban Transportation Environment" held at MS University Baroda, Gujarat, during 13-14 March, 2004.
4. Attended training on "GIS and its Applications" at Regional Remote sensing Service Centre, Nagpur, Indian Space Research Organization (ISRO) in May 2001.

5. Attended training on “GIS and its Applications” at Remote sensing & Communication Centre, Gandhinagar in June 2002.
6. Attended a Summer School (STTP) on “Use of GIS in Ground Water Modeling” at Malaviya National Institute of Technology, Jaipur during 16-17 June 2003.
7. Attended a Workshop on “Advance Building Services” at Nirma Institute Of Technology, Ahmedabad during 29-30 March 2003.
8. Short Term training Programme approved by AICTE/ISTE on “Evaluation, Repair and Rehabilitation of Distressed Structures” during Nov. 26 to Dec 08, 2001 held at Nirma Institute of technology, Ahmedabad.
9. Short Term training Programme approved by AICTE/ISTE on “Mechanization for Construction Projects” during Dec 18-29, 2001 held at Nirma Institute of technology, Ahmedabad.
10. Attended a preliminary level training on “GIS and its Applications” at Regional Remote sensing Service Centre, Nagpur, Indian Space Research Organization (ISRO) in May 2001.

Abstract of the Doctoral Research Study

ESTIMATION OF PASSENGER CAR UNIT OF VEHICLES IN HETEROGENEOUS TRAFFIC ON INTERCITY ROADS USING MICRO-SIMULATION

Information on traffic volume is an important basic input required for planning, design, operation and management of roadway systems. Expressing traffic volume as number of vehicles passing a given section of road per unit time will be inappropriate when several types of vehicles with widely varying static and dynamic characteristics are present in the road traffic. The problem of measuring volume of such heterogeneous traffic has been addressed by converting the different types of vehicles into equivalent passenger cars and expressing the volume as Passenger Car Unit (PCU) per hour. Since the traffic flow phenomenon is influenced by several stochastic variables of random nature, micro-simulation technique has been found to be a versatile tool to model complex traffic systems for the study of its characteristics over a wide range of operating conditions. At present, sufficiently accurate, PCU and capacity related guidelines for multilane intercity roads are not available in India. Hence, the present study aims at estimating PCU values for the different categories of vehicles of heterogeneous traffic under different roadway and traffic conditions and to study the effect of traffic volume, roadway width and magnitude of upgrade and its length, on PCU values of vehicles, using micro-simulation technique.

A simulation model of heterogeneous traffic flow, recently developed at IIT Madras, was used for this study. For the purpose of model validation, it was decided to consider the derived traffic-flow characteristics, at the micro level, so that the validation is satisfactory. Accordingly, the field observed and simulated speeds of each of the vehicle categories were compared to check for the validity of the model. The PCU value for the

different types of vehicles, at various volume levels, was estimated by taking the average stream speed as the measure of performance. The effect of change in road width on PCU values, under heterogeneous traffic conditions, was studied; by comparing the estimated PCU values of vehicles on four-lane and six-lane divided intercity roads. Then, the validated traffic-flow simulation model was also applied to estimate the PCU values of vehicles, over a wide range of traffic volumes, on roads having grades of different magnitudes. The effect of change in magnitude of grade and its length on PCU values, under heterogeneous traffic conditions, was studied, by comparing the estimated PCU values of vehicles on road stretches, having upgrades varying from 2% to 6%. The upper limit of the length of grade, for the estimation of PCU values, is fixed based on the developed speed-distance profiles for the different vehicles along the different grades. The estimated PCU values are used for deriving capacity guidelines.

The check for the accuracy of the PCU estimates, for level roads as well as road stretches with upgrades, was done by simulating homogeneous (cars-only) traffic and the heterogeneous traffic flows on the same road space. Using the results of the simulation experiments, plots, relating a set of volume-to-capacity ratios and the corresponding flows were made, on the same set of axes, for cars-only and the heterogeneous traffic. It is found that both the histograms were matching closely, for all the cases. To explain the accuracy of the PCU estimates on statistical basis, a paired t- test was performed, for each of the cases and the results indicate that the PCU values are accurate enough to represent the traffic flow in PCU per hour at 5% level of significance. Based on the results of the study, it can be said that, there is reason to treat PCU value of a vehicle type, as a dynamic quantity rather than treating it as a constant.

Date: 9-4-2016

Place: Surat

Sd/-

Dr. Shriniwas S Arkatkar

Assistant Professor
Transportation Engineering and Planning Section
Department of Civil Engineering
Sardar Vallabhbhai National Institute of Technology, Surat
Ichchanath, Surat-395007
Ph: +91-261-2201879
Mobile No: 08140252777
email: sarkatkar@ced.svnit.ac.in, sarktkar@gmail.com