

ANDRÉ LUIZ BARBOSA NUNES DA CUNHA, Ph.D.

Tenured Assistant Professor of Civil Engineering & AI Specialist in Transport Engineering

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Professional profile

Tenured researcher and Technical Lead with 12+ years of experience bridging the gap between advanced academic research and industrial application in Civil Engineering. Specialist in Transport Modelling, Highway Safety, and Artificial Intelligence, with a focus on translating R&D into operational safety standards. Proven track record of securing over USD 3.30 Million (BRL 18.6M) in competitive grants and contracts [Section 6]. Global academic experience includes visiting appointments in Australia (UoM), Germany (TUM), Croatia (UNIZG), and Portugal (UMinho) [Section 2].

Key career highlights

- **Research Leadership :** Directed a research portfolio of 60+ scholars (6 PhD, 15 MSc, 25+ Undergraduate), guiding 3 PhDs and 12 MScs to completion. [Section 7]
- **Industry Impact :** Partnered with major concessionaires (CCR & ARTERIS) to define national safety standards for Truck Escape Ramps, utilizing simulation models to enforce safe approach speed limits on federal highways. [Section 4]
- **AI & Innovation :** Pioneered the application of Deep Learning and Computer Vision (OpenCV) for automated vehicle classification and traffic parameter extraction. [Section 7]

Areas of expertise

- **Transport Modelling :** traffic simulation (TSIS-CORSIM, VISSIM, AIMSUN, SUMO, MATSim), calibration & validation, network vulnerability analysis, urban mobility. [Section 3]
- **Data Science & AI :** deep learning, computer vision, graph neural networks, crash prediction models, agent-based, R, Python, C++, SQL.
- **Highway Engineering :** geometric design, truck escape ramp design, heavy vehicle operations, operational speed validation, capacity and level of service.

Research Agenda

- **Next-Gen AI in Transport (LMMs & Vision) :** Advancing beyond traditional computer vision to deploy Large Multi-modal Models (LMMs) for real-time traffic anomaly detection and autonomous logistics. My current roadmap focuses on integrating unstructured data (video/text/sensors) into predictive safety models, utilizing Edge AI for low-latency decision-making in mixed-traffic environments.
 - **Urban Climate Resilience & Social Equity :** Assessing the vulnerability of multimodal urban networks to climate stressors, with a specific focus on accessibility for vulnerable populations. My research quantifies how extreme weather impacts the daily commute to essential services (employment, healthcare, leisure) for marginalized communities. By evaluating city-wide intermodality and network redundancy, I aim to design resilient public transport systems that ensure equitable access during environmental disruptions.
 - **International Funding Targets :** Preparing collaborative grant proposals to fund the development of “Digital Twins” for highway concessions in developing economies.
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1 EDUCATION

1. **Ph.D. in Transportation Engineering** Nov. 2013
University of São Paulo (USP), São Carlos School of Engineering (EESC), Brazil
 - Thesis: "Automatic system for vehicular traffic parameters using OpenCV"
 - DOI: [10.11606/T.18.2013.tde-19112013-165611](https://doi.org/10.11606/T.18.2013.tde-19112013-165611)
 - Distinction: Funded by CNPq (National Council for Scientific and Technological Development), Brazil.
 2. **M.Sc. in Transportation Engineering** Oct. 2007
University of São Paulo (USP), São Carlos School of Engineering (EESC), Brazil
 - Thesis: "Evaluation of performance measurement impact on truck passenger car equivalents"
 - DOI: [10.11606/D.18.2007.tde-27112007-094400](https://doi.org/10.11606/D.18.2007.tde-27112007-094400)
 - Distinction: Funded by CNPq, Brazil.
 3. **B.S. in Civil Engineering** Feb. 2004
Federal University of Mato Grosso do Sul (UFMS), Brazil
 - GPA: 3.79/4.00 → (9.5/10.0), (Highest Honors)
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2 INTERNATIONAL MOBILITY

1. **University of Melbourne (UoM)**, Australia | Visiting Researcher (CAPES-Print) 2020
 2. **University of Zagreb (UNIZG)**, Croatia | Visiting Lecturer (ERASMUS+) 2018, 2022
 3. **University of Minho (UMinho)**, Portugal | Visiting Professor (CAPES-FCT) 2017
 4. **Technical University of Munich (TUM)**, Germany | Visiting Professor (FAPESP-BAYLAT) 2016, 2017
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3 TECHNICAL PROFICIENCY & COMPUTATIONAL STACK

- **Traffic Simulation & Modelling** Expert proficiency in PTV Vissim, AIMSUN, SUMO, MATSim, and TSIS-CORSIM. Experienced in calibration, validation, and API scripting for custom scenarios.
 - **Data Science & Artificial Intelligence** Development of Deep Learning models and Computer Vision pipelines using OpenCV, PyTorch, and TensorFlow. Application of Graph Neural Networks (GNNs) for network analysis.
 - **Programming & Development** Python, R, C++, Julia, SQL, MATLAB, HTML, CSS.
 - **Engineering & Geospatial Tools** AutoCAD, Civil 3D, QGIS.
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4 INDUSTRY R&D

1. **CCR Group – Via Dutra (RioSP)** | Technical Lead & Principal Investigator Rio de Janeiro, Brazil
(Apr 2025 – Dec 2025) Defined national safety standards for heavy vehicle protocols on Brazil's largest highway concession. Developed and executed stress-test simulation models to validate operational speeds for the new Serra das Araras descending ramp.
(Jun 2023 – Dec 2023) Optimized critical infrastructure planning for the Via Dutra highway expansion. Utilized advanced traffic simulation to determine the precise engineering placement of truck escape ramps, directly influencing construction design decisions.
2. **ARTERIS – Autopista Litoral Sul (ALS)** | Technical Lead & Principal Investigator Curitiba, Brazil

(Nov 2019 – Dec 2019) Enforced operational safety limits on federal highway BR-376 by directing full-scale field performance tests. Managed a fleet of instrumented trucks to establish the approach speed protocols now mandated for all heavy commercial vehicles.¹

3. **TECTRAN – Transport Engineering Consultants Ltd.** | Transport Planning Consultant Minas Gerais, Brazil

(Apr 2012 – Dec 2012) Engineered the state-wide logistics architecture for the Minas Gerais State Logistics Plan (PELT). Led the database integration that underpinned regional freight transport strategy and policy planning.

5 ACADEMIC APPOINTMENTS

5.1 Tenure track position

1. **Tenured Assistant Professor** | Full Dedication to Teaching and Research (RDIDP) 2014 – present
University of São Paulo (USP), Department of Transportation Engineering, São Carlos, Brazil
 - Current Duties: Lead of Intelligent Transportation Systems Group, Graduate Supervision, Undergraduate Teaching.
 2. **Research Assistant** | Laboratory Specialist 2013 – 2014
University of São Paulo (USP), Department of Transportation Engineering, São Carlos, Brazil
 - Duties: Develop scientific research in projects led by faculty, with didactic-scientific and extension focus.
 3. **Assistant Professor** | Fixed-term position 2010 – 2010
São Paulo State University (UNESP), College of Engineering Bauru (FEB), Bauru, Brazil
 - Duties: Undergraduate teaching.
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6 RESEARCH FUNDING & GRANTS

Total Funding Secured: ~USD 3.38 Million (BRL 18.6M)

6.1 Competitive Research Grants (Peer-Reviewed)

1. **CCD Sustainability and Innovation in Road Infrastructure** 2025–2030
Pavement Recycling as a Pillar of Decarbonization - Centers for Science for Development (CCD)
Role: Co-Principal Investigator
Value: ~USD 1.45 Million (BRL 8.0M)
Sponsor: FAPESP Grant (2025/07146-8), Brazil
2. **Artificial Intelligence Recreating Environments (IARA)** 2023–2028
Applied Research Centers Program (CEPID)
Role: Research Collaborator
Value: ~USD 1.8 Million (BRL 10.0M)
Sponsor: FAPESP Grant (Process 20/09835-1), Brazil
3. **Rethinking traffic modeling in transport networks for the next generation of smart/connected cities** 2023–2026
Role: Principal Investigator
Value: ~USD 13,900 (BRL 72,000)
Sponsor: CNPq Consolidated Research Groups Grant (Process 409087/2023-8), Brazil
4. **Artificial Intelligence: development of tools for urban mobility** 2023–2026
Role: Principal Investigator
Value: ~USD 7,200 (BRL 40,000)
Sponsor: CNPq Research Productivity Grant (Process 311964/2022-2), Brazil

¹Interview featured on Rede Globo's Jornal Hoje program (<https://globoplay.globo.com/v/8165879/>).

5. **Innovative Control Strategies for Sustainable Mobility in Smart Cities** 2021–2021
 Role: Co-Principal Investigator
 Value: ~USD 9,500 (EUR 8,000)
 Sponsor: University of Zagreb (UNIZG), Croatia
6. **Visiting Professorship** 2019–2019
 Role: Principal Investigator
 Value: ~USD 103,800 (AUD 150,000)
 Sponsor: CAPES-Print Program (Process 88887.371506/2019-00), Brazil
7. **Image-based method for axle detection and truck classification** 2018–2022
 Role: Principal Investigator
 Value: ~USD 2,700 (BRL 15,000)
 Sponsor: CNPq Universal Grant (Process 436954/2018-4), Brazil
8. **Application of deep learning in intelligent traffic control system** 2018–2018
 Role: Co-Principal Investigator
 Value: ~USD 10,100 (EUR 8,500)
 Sponsor: University of Zagreb (UNIZG), Croatia
9. **Studies aimed at promoting sustainable and safe urban mobility** 2013–2016
 Role: Co-Principal Investigator
 Value: ~USD 3,600 (BRL 20,000)
 Sponsor: CAPES/FCT Program (Process 39/2017), Brazil

6.2 Industry Contracts & Translational Research

1. **Redesign and Validate the Truck Escape Ramp on the BR-116 (Via Dutra)** 2025–2025
 Role: Principal Investigator
 Value: ~USD 32,700 (BRL 180,000)
 Sponsor: Group CCR Highways (RioSP), Brazil
2. **Evaluation of Truck Escape Ramp on the BR-116 (Via Dutra)** 2023–2023
 Role: Principal Investigator
 Value: ~USD 16,300 (BRL 90,000)
 Sponsor: Group CCR Highways (RioSP), Brazil
3. **Site Optimization for Truck Escape Ramps on the BR-376** 2019–2019
 Role: Principal Investigator
 Value: ~USD 27,200 (BRL 150,000)
 Sponsor: ARTERIS Autopista Litoral Sul (ALS), Brazil

7 RESEARCH SUPERVISION & MENTORING

Summary of Supervision Successfully directed 60+ researchers across all academic levels.

- **PhD Students:** 6 total (3 completed, 3 in progress)
- **MSc Students:** 15 total (12 completed, 3 in progress)
- **Scientific Initiation:** 18 total (16 completed, 2 in progress)
- **Capstone Projects:** 25 completed

Key Research Theses Directed

- AI & Computer Vision** Supervised novel applications of Deep Learning and Large Multimodal Models (LMMs) for automated truck axle detection and vehicle classification.
- Infrastructure Resilience** Guided research on graph theory applications for measuring urban network vulnerability to extreme flood events.
- Sustainable Mobility** Overseeing current doctoral work on the spatial equity and job accessibility impacts of e-bike systems in metropolitan areas.

Alumni Placement

Graduates have secured strategic roles at National Regulatory Agencies (e.g., ANTT, ARTESP), leading Transportation Consultancies, and the Financial Sector.

7.1 Completed

1. Ph.D. (2025-12-08) : [Leandro Arab Marcomini](#) “Classification of trucks by axles using Deep Learning and a Large Multi-modal Model”
2. Ph.D. (2025-05-23) : [Andre Borgato Morelli](#) “Analysis of Flood Vulnerability in Brazilian Urban Networks Using Graph Theory Tools.”
3. M.Sc. (2024-08-27): [Crhistian Emilio Ribeiro](#) “Evaluation of deep neural networks for vehicle detection in satellite images”
4. M.Sc. (2022-08-19): [Paola Yumi Matsumoto](#) “Calibration of Cellular Automata model for simulation of the traffic flow behavior in São Paulo roads”
5. M.Sc. (2021-08-05): [Helena Stein Stefani](#) “Urban roadway traffic flow prediction from crowdsourced speed data”
6. M.Sc. (2020-12-10): [Alceu Dal Bosco Junior](#) “Usability of Points of Interest and network centralities of collaborative maps for trip attraction analysis: case study of Curitiba”
7. M.Sc. (2019-10-22): [Andre Borgato Morelli](#) “Exploratory analysis of resilience in urban road networks”
8. M.Sc. (2019-06-28): [Bruna Kuramoto](#) “Data exploration of collaborative maps in evaluations of Brazilian urban morphologies”
9. M.Sc. (2019-06-28): [Adriano Belletti Felicio](#) “Evaluation of the behavior of motorcyclists through the video image processing system”
10. M.Sc. (2018-09-13): [Natália Ribeiro Panice](#) “Truck axle detection automatic method based on images”
11. M.Sc. (2018-09-03): [Mariana Marçal Thebit](#) “Reconstruction of a synthetic O/D matrix using traffic data available on the web”
12. M.Sc. (2018-08-10): [Leandro Arab Marcomini](#) “Automatic identification of traffic behavior using video images”
13. M.Sc. (2018-07-20): [Gabriel Jurado Martins de Oliveira](#) “Calibration of speed-flow relationship for freeways and multi-lane highways”
14. M.Sc. (2017-08-10): [Elaine Rodrigues Ribeiro](#) “Exploratory method analysis using Wavelet to detect patterns and anomalies in traffic history data”

7.2 In progress

1. M.Sc. : [Andressa Vitório Costa](#) “Accessibility to Social Services in Belo Horizonte-MG”
2. M.Sc. : [Maria Eduarda Saquetto Michelini](#) “Development of an Emission Estimation Model for Brazilian Cases”
3. M.Sc. : [Rodrigo Otávio Fraga Peixoto de Oliveira](#) “Urban resilience assessment through a comparative study of flood prediction methods”
4. Ph.D. : [Elaine Rodrigues Ribeiro](#) “Analysis of motorcyclist’ behaviour on urban segments: Relationship between riding patterns and rider profile”
5. Ph.D. : [Thiago Vinícius Louro](#) “Examining The Impacts Of Electric Bicycles On Accessibility To Jobs And Spatial Equity”
6. Ph.D. : [Pedro Henrique Caldeira Caliari](#) “Evaluation of causal inference and spatial effects on travel behavior”

8 TEACHING PORTFOLIO & EDUCATIONAL LEADERSHIP

University of São Paulo (USP) 2014 - present

8.1 Data Science & Computational Engineering

Multivariate Data Analysis & Applied Statistics (Graduate) Modernized the graduate curriculum to include AI techniques (Neural Networks, Decision Trees, Cluster, Genetic Algorithms) and R programming. Guided students in publishing original research based on course datasets.

Computational Tools for Civil Engineering (Undergraduate) Designed and implemented a new elective course to bridge the digital skills gap, introducing 20+ students annually to spreadsheet programming, algorithmic problem-solving, AutoCAD, Civil-3D, and GIS.

8.2 Core Transport Engineering & Simulation

Fundamentals of Transportation Engineering (Undergraduate) Achieved exceptional student evaluations (4.5/5.0) by implementing “inverted classroom” strategies and project-based learning for cohorts of 50+ students.

Traffic Engineering & Simulation (Undergraduate/Graduate) Delivers advanced training in microscopic simulation theories (TSIS, VISSIM, AIMSUN, and SUMO), equipping students with industry-ready technical skills.

8.3 Logistics & Infrastructure

Logistics & Supply Chain Management Completely redesigned the syllabus to address contemporary challenges, integrating AI-driven logistics tools, GIS route planning, and Green Logistics best practices.

Airports & Waterways Managed large-scale compulsory modules (50+ students), balancing theoretical foundations with practical operational exercises.

8.4 Capstone & Mentorship

Final Year Engineering Projects (Undergraduate) Supervised 25+ capstone projects, guiding students from research definition to professional-grade technical reporting .

Internship Supervision (Undergraduate) Oversee professional placements for 15+ students, ensuring alignment between academic objectives and industry requirements .

9 PUBLICATIONS

Students advised by prof. A.L. Cunha are underlined.

9.1 Submitted Manuscripts

1. SALINAS, K., BARELLA, V., **CUNHA, A.L.**, OLIVEIRA, G.M., VIERA, T., NONATO, L.G. (2025) “ORDENA: ORigin-DEstination data exploration”. IEEE Transactions on Visualization and Computer Graphics <[arXiv:2510.18278](https://arxiv.org/abs/2510.18278)>

9.2 Peer-Reviewed Journal

1. LOURO, T.V.; GRIGILON, A.B.; TIRACHINI, A.; **CUNHA, A.L.**; GEURS, K.T. (2026) “How Do E-Bikes Measure Up? Analyzing Speed Differences and Network Impacts of São Paulo’s Bikesharing System”. Transportation. <DOI: [10.31224/5719](https://doi.org/10.31224/5719)>
2. LOURO, T.V.; GRIGILON, A.B.; **CUNHA, A.L.**; GEURS, K.T. (2025) “E-bikes’ impact on job accessibility and equity in São Paulo and Rio”. Transportation Research Part D: Transport and Environment. <DOI: [10.1016/j.trd.2025.105072](https://doi.org/10.1016/j.trd.2025.105072)>
3. DE OLIVEIRA, G.J.M.; LAVIERI, P.S.; **CUNHA, A.L.** (2023) Integrating a non-gridded space representation into a graph neural networks model for citywide short-term crash risk prediction. Urban Informatics. v.2, p.7. <DOI: [10.1007/s44212-023-00032-6](https://doi.org/10.1007/s44212-023-00032-6)>

4. FLEURY, M.P.; KAMAKURA, G.K.; PITOMBO, C.S.; **CUNHA, A.L.B.N.**; FERREIRA, F.B.; LINS DA SILVA, J. (2023) Assessing and Predicting Geogrid Reduction Factors after Damage Induced by Dropping Recycled Aggregates. *Sustainability*. v.15, p.9942.
[<DOI: 10.3390/su15139942>](https://doi.org/10.3390/su15139942)
5. FLEURY, M.P.; KAMAKURA, G.K.; PITOMBO, C.S.; **CUNHA, A.L.B.N.**; LINS DA SILVA, J. (2023) Prediction of non-woven geotextiles' reduction factors for damage caused by the drop of backfill materials. *Geotextiles and Geomembranes*. v.1, p.1 - 11.
[<DOI: 10.1016/j.geotexmem.2023.05.004>](https://doi.org/10.1016/j.geotexmem.2023.05.004)
6. SILVA, F.A.E.; BESSA JUNIOR, J.E.; COSTA, A.L.; **CUNHA, A.L.**; VELHO, D.M.C.; ANDALICIO, A. (2023) Exploratory analysis of the VISSIM simulation model for two-lane highways. *Engenharia Civil UM (Braga)*, n.63, p.6-17.
[<DOI: 10.21814/ecum.4493>](https://doi.org/10.21814/ecum.4493)
7. SILVA, F.A.; BESSA JUNIOR, J.E.; COSTA, A.L.; **CUNHA, A.L.**; VELHO, D.M.C. (2022) Analysis of no-passing zones to assess the level of service on two-lane rural highways in Brazil. *Case Studies on Transport Policy*. v.10, p.248-256.
[<DOI: 10.1016/j.cstp.2021.12.006>](https://doi.org/10.1016/j.cstp.2021.12.006)
8. MORELLI, A. B.; **CUNHA, A.L.** (2021) Assessing vulnerabilities in transport networks: a graph-theoretic approach. *Transportes* (Rio de Janeiro). v.29, p.161-172.
[<DOI: 10.14295/transportes.v29i1.2250>](https://doi.org/10.14295/transportes.v29i1.2250)
9. SILVA, F.A.; BESSA JÚNIOR, J.E.; COSTA, A.L.; **CUNHA, A.L.**; ANDALÍCIO, A.F.; DA COSTA VELHO, D.M.; NAZARETH, V.S. (2021) Evaluation of the effect of climbing lanes on segments of two-lane highways. *Transportes* (Rio de Janeiro). v.29, p.1-16.
[<DOI: 10.14295/transportes.v29i1.2359>](https://doi.org/10.14295/transportes.v29i1.2359)
10. MORELLI, A.B.; **CUNHA, A.L.** (2021) Measuring urban road network vulnerability to extreme events: An application for urban floods. *Transportation Research Part D – Transport and Environment*. v.93, p.102770.
[<DOI: 10.1016/j.trd.2021.102770>](https://doi.org/10.1016/j.trd.2021.102770)
11. MARTINS, D.O.; OLIVEIRA, G.J.M.; MORAES, F.R.; SILVA, I.; **CUNHA, A.L.** (2020) Geomatics data management system. *Revista Brasileira de Geomática*. v.8, p.056-069.
[<DOI: 10.3895/rbgeo.v8n1.10141>](https://doi.org/10.3895/rbgeo.v8n1.10141)
12. PIANUCCI, M.N.; PITOMBO, C.S.; **CUNHA, A.L.**; LIMA SEGANTINE, P.C. (2019) Forecasting household travel demand through a sequential method based on synthetic population and artificial neural networks. *Transportes* (Rio de Janeiro). v.27, p.1-23.
[<DOI: 10.14295/transportes.v27i4.1409>](https://doi.org/10.14295/transportes.v27i4.1409)
13. OLIVEIRA, J.V.M.; LAROCCA, A.P.C.; ARAUJO NETO, J.O.; **CUNHA, A.L.**; SANTOS, M.C.; SCHAAAL, R.E. (2019) Rigid Bridges Health Dynamic Monitoring Using 100 Hz GPS Single-Frequency and Accelerometers. *Positioning*. v.10, p.17-33.
[<DOI: 10.4236/pos.2019.102002>](https://doi.org/10.4236/pos.2019.102002)
14. DE OLIVEIRA, J.V.M.; LAROCCA, A.P.C.; DE ARAÚJO NETO, J.O.; CUNHA, A.L.; DOS SANTOS, M.C.; SCHAAAL, R.E. (2019) Vibration monitoring of a small concrete bridge using wavelet transforms on GPS data. *Journal Of Civil Structural Health Monitoring*. v.9, p.397-409.
[<DOI: 10.1007/s13349-019-00341-y>](https://doi.org/10.1007/s13349-019-00341-y)
15. LINDNER, A.; PITOMBO, C.S.; **CUNHA, A.L.** (2017) Estimating motorized travel mode choice using classifiers: An application for high-dimensional multicollinear data. *Travel Behaviour and Society*. v.6, p.100-109.
[<DOI: 10.1016/j.tbs.2016.08.003>](https://doi.org/10.1016/j.tbs.2016.08.003)
16. SOUZA, N.C.; PITOMBO, C.; **CUNHA, A.L.**; LAROCCA, A.P.C.; DE ALMEIDA FILHO, G.S. (2017) Model for classification of linear erosion processes along railways through decision tree algorithm and geotechnologies. *Boletim de Ciências Geodésicas*. v.23, p.72-86.
[<DOI: 10.1590/S1982-21702017000100005>](https://doi.org/10.1590/S1982-21702017000100005)
17. ANDRADE, G.R.; PITOMBO, C.; **CUNHA, A.L.N.**; SETTI, J.R. (2016) A Model for Estimating Free-Flow Speed on Brazilian Expressways. *Transportation Research Procedia*. v.15, p.378-388.
[<DOI: 10.1016/j.trpro.2016.06.032>](https://doi.org/10.1016/j.trpro.2016.06.032)
18. LAROCCA, A.P.C.; ARAÚJO NETO, J.O.; TRABANCO, J.L.A.; BARBOSA, A.C.B.; **CUNHA, A.L.B.N.**; SCHAAAL, R.E. (2015) Use of 100 Hz GPS receivers in the detection of millimeter vertical deflections of small concrete bridges. *Boletim de Ciências Geodésicas*. v.21, p.290-307.
[<DOI: 10.1590/S1982-21702015000200017>](https://doi.org/10.1590/S1982-21702015000200017)

19. LAROCCA, A.P.C.; ARAUJO NETO, J.O.; BARBOSA, A.C.B.; TRABANCO, J.L.A.; **CUNHA, A.L.B.N.** (2014) Dynamic Monitoring vertical Deflection of Small Concrete Bridge Using Conventional Sensors And 100 Hz GPS Receivers - Preliminary Results. IOSRJEN Journal of Engineering. v.04, p.09-20.
[<DOI: 10.9790/3021-04920920>](https://doi.org/10.9790/3021-04920920)
20. **CUNHA, A.L.**; SETTI, J.R. (2011) Truck equivalence factors for divided, multilane highways in Brazil. Procedia: Social and Behavioral Sciences. v.16, p.248-258.
[<DOI: 10.1016/j.sbspro.2011.04.447>](https://doi.org/10.1016/j.sbspro.2011.04.447)

9.3 Conference Proceedings

1. MORELLI, A.B.; ALIZON, G.B.; **CUNHA, A.L.** (2025) Alternative-Route Efficiency in Brazilian Cities: How Flood-Induced Collapse Patterns Differ from Random Blockages. In: XXXIX ANPET – Research and Teaching in Transport Congress, 2025, Goiânia. Proceedings of the 39th ANPET.
2. LOURO, T.V.; ASSIS, L.B.M.; JUNIOR, J.U.P.; **CUNHA, A.L.**; GEURS, K.T (2025) Job Accessibility in the 15-Minute City: A Comparative Analysis of Walking, Cycling, and E-Bikes in Four Brazilian Cities. In: XXXIX ANPET – Research and Teaching in Transport Congress, 2025, Goiânia. Proceedings of the 39th ANPET.
3. ISHIHARA, B.A.; QUINTINO, P.G.; **CUNHA, A.L.**; SETTI, J.R. (2025) Operation of Heavy Vehicles on Long, Steep Downgrades: Brake Thermal Simulation Based on ABNT NBR 10966-2. In: XXXIX ANPET – Research and Teaching in Transport Congress, 2025, Goiânia. Proceedings of the 39th ANPET.
4. RODRIGUES, L.R.; PITOMBO, C.S.; **CUNHA, A.L.**; LAROCCA, A.P.C.; FERRAZ, A.C.P. (2025) Identification of Crime and Traffic Crash Hotspots in the Vicinity of Bus Stops. In: XXXIX ANPET – Research and Teaching in Transport Congress, 2025, Goiânia. Proceedings of the 39th ANPET.
5. DAVOLI, J.P.; PITOMBO, C.S.; **CUNHA, A.L.** (2025) Application of a Random-Forest-Based Variable Selection Method for the Analysis of Post-COVID-19 Active Transportation. In: XXXIX ANPET – Research and Teaching in Transport Congress, 2025, Goiânia. Proceedings of the 39th ANPET.
6. MORELLI, A.B.; **CUNHA, A.L.** (2024) Vulnerability to flooding: how long-trip prevalence reduces the efficiency of alternative routes. In: XXXVIII ANPET – Research and Teaching in Transport Congress, 2024, Florianópolis. Proceedings of the 38th ANPET.
7. MARCOMINI, L.A.; **CUNHA, A.L.** (2023) Truck axle detection using Neural Networks: analysis of the number of images in the training dataset. In: ANPET – Research and Teaching in Transport Congress, 2023, Santos. Proceedings of the 37th ANPET.
8. MORELLI, A.B.; LOURO, T.V.; **CUNHA, A.L.** (2022) Proposal of bikeability indicators from an accessibility perspective: identifying roads best suited for cycle lanes using widely available data. In: XXXVI ANPET – Research and Teaching in Transport Congress, 2022, Fortaleza. Proceedings of the XXXVI ANPET.
9. MORELLI, A.B.; **CUNHA, A.L.** (2021) Pedestrian accessibility: impacts of morphological and demographic characteristics on access to facilities. In: XXXV ANPET – Research and Teaching in Transport Congress, 2021. Proceedings of the XXXV ANPET.
10. OLIVATTO, T.F.; PITOMBO, C.S.; **CUNHA, A.L.**; MELANDA, E.A. (2020) Relationships between the nutritional status of preschoolers and socioeconomic and urban infrastructure indicators: a CART-based approach. In: PLURIS – Luso-Brazilian Congress on Urban, Regional, Integrated and Sustainable Planning, 2020. Proceedings of the 9th PLURIS.
11. BOSCO JUNIOR, A.D.; **CUNHA, A.L.** (2020) Street and zonal scale relationship between network centrality and economic activities: case study in Curitiba, Brazil. In: PLURIS – Luso-Brazilian Congress on Urban, Regional, Integrated and Sustainable Planning, 2020. Proceedings of the 9th PLURIS.
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10 AWARDS & HONORS

- **ANPET Scientific Production Award** 2023
National Agency for Transportation Research and Education (ANPET), Brazil.
 - **Excellence Certificate** 2017
Best professor of the Department of Transportation Engineering (USP-EESC-STT), Academic Secretariat of Civil Engineering (SACivil), Brazil.
 - **Excellence Certificate** 2016
Best professor of the Department of Transportation Engineering (USP-EESC-STT), Academic Secretariat of Civil Engineering (SACivil), Brazil.
 - **ABCR Innovation Salon Award** 2015
9th Brazilian Congress on Highways and Concessions (CBR&C),
5th Innovation Salon of the Brazilian Association of Highway Concessionaires (ABCR), Brazil.
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11 PROFESSIONAL SERVICES

11.1 University of São Paulo

- **Departmental Strategy:** elected member of the Department Council, governing faculty hiring priorities, budget allocation, and strategic partnerships for the Transport Engineering department.
- **Research Innovation:** Shaping R&D policies as a member of the Research and Innovation Committee (CPqI), fostering interdisciplinary grants and industry collaboration.
- **Graduate Coordination:** Steering the Graduate Program in Transport Engineering (CCP-ET); overseeing admissions, curriculum quality control, and scholarship distribution for Master's and PhD cohorts.
- **Pedagogical Reform:** Driving modernization in engineering education as a board member of the Center for Educational Technology (CETEPE) and the Culture & Extension Committee (CCE).

11.2 Editorial & Peer Review Leadership

- **Journal Adjudication:** Ensuring scientific rigor as an active reviewer for high-impact Q1 journals, including Transportation Research Part E, Engineering Applications of Artificial Intelligence (EAAI), and Sustainable Cities and Society.
- **Conference Technical Committees:** Defining technical agendas for global bodies including the Transportation Research Board (TRB), IEEE Intelligent Transportation Systems Society (ITSS), and the National Association for Research (ANPET).