André Luiz Barbosa Nunes da Cunha, Ph.D.

Assistant Professor of Civil Engineering | Transport Modelling | AI Specialist

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Research keywords Transport Modelling, AI, Computer Vision, Urban Mobility, Accessibility, Vulnerability, Smart Cities, Simulation, Logistics

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1 SUMMARY

Profile Overview Dr. Cunha is a tenured professor and technical consultant with over 10 years of experience bridging the gap between academic research and industrial application. His expertise lies in using Artificial Intelligence and Computer Vision to solve complex Urban Mobility and Logistics challenges. He combines a strong record of securing grant funding with practical consultancy for major highway concessionaires.

1.1 Key Highlights

Global Mobility Visiting positions at University of Melbourne (Australia), TUM (Germany), Universty of Zagreb (Croatia), and University of Minho (Portugal). *[See section 3.1]*
Industry Impact Serves as a technical consultant for major highway concessionaires in Brazil (Motiva-CCR, ARTERIS), focusing on the design and validation of truck escape ramps. *[See section 3.2]*
Teaching Quality Achieved 4.5/5.0 student ratings implementing Project-Based Learning and Inverted Classroom strategies. Experience in 10 undergraduate courses (4 mandatory, 6 elective) and 6 graduate courses (2 mandatory, 4 elective).*[See section 4]*
Talent Development Supervised 60+ researchers, including 6 PhD students, 15 MSc students, 18 Scientific Initiation, and 25+ undergraduate projects. *[See section 5]*
Research Funding Secured over BRL 18.6 Million (~USD 3.38M) in public and private grants. *[See Section 6]*
Awards 4 (2 Best Paper Awards, 2 Best Professor Awards). *[See section 8]*
Technical Expertise Proficient in AI tools (OpenCV, CrewAI), programming (Python, R, C++), and traffic simulation software (VISSIM, AIMSUN, TSIS-CORSIM). *[See section 10]*

1.2 Selected Key Publications

A complete list is in section 7.

1. E-Bikes & Network Impacts (2026): "How Do E-Bikes Measure Up? Analyzing Speed Differences and Network Impacts of São Paulo's Bikesharing System" — Transportation.
2. Accessibility & Equity (2025): "E-bikes' impact on job accessibility and equity in São Paulo and Rio" — Transportation Research Part D: Transport and Environment.
3. AI & Crash Prediction (2023): "Integrating a non-gridded space representation into a graph neural networks model for citywide short-term crash risk prediction" — Urban Informatics.
4. Network Vulnerability (2021): "Measuring urban road network vulnerability to extreme events: An application for urban floods" — Transportation Research Part D: Transport and Environment.

2 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`"
   Advisor: Prof. José Reynaldo Anselmo Setti
   DOI: 10.11606/T.18.2013.tde-19112013-165611
   Funded by National Council for Scientific and Technological Development (CNPq), 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`"
   Advisor: Prof. José Reynaldo Anselmo Setti
   DOI: 10.11606/D.18.2007.tde-27112007-094400
   Funded by National Council for Scientific and Technological Development (CNPq), Brazil.
3. **B.S. in Civil Engineering** Feb. 2004
   Federal University of Mato Grosso do Sul (UFMS), Campo Grande, Brazil
   GPA: 3.79/4.00 → (9.5/10.0)

3 EXPERIENCE

3.1 Academic Appointments

1. **University of São Paulo (USP-EESC)** Jul. 2014 – present
   Assistant Professor (MS-3.2) *São Carlos, Brazil*
   Tenured-track position, Full Dedication to Teaching and Research Regime (RDIDP)
2. **University of Zagreb (UNIZG)** Apr. 2022
   Visiting Lecturer *Zagreb, Croatia*
   ERASMUS+ Program: Virtual Teaching Mobility Agreement (Workload: 8h)
3. **University of Melbourne (UniMelb)** Jan. 2020 – Dec 2020
   Visiting Professor *Melbourne, Australia*
   CAPES-Print Program – Junior Visiting Professor No. 88887.371506/2019-00
4. **University of Zagreb (UNIZG)** Jun. 2018
   Visiting Lecturer *Zagreb, Croatia*
   ERASMUS+ Program: Higher Education Mobility Agreement (UNIZG/USP-EESC) (Workload: 13h)
5. **University of São Paulo (USP)** Sep. 2017
   Visiting Professor *São Paulo, Brazil*
   TUM-USP `Workshop on Sustainable Mobility` funded by BAYLAT/FAPESP Call
6. **University of Minho (UMINHO)** Jul. 2017
   Visiting Professor *Guimarães, Portugal*
   Mission funded by CAPES-FCT n. 39/2014
7. **Technical University of Munich (TUM)** Nov. 2016 – Dec. 2016
   Visiting Professor *Munich, Germany*
   TUM-USP `Workshop on Sustainable Mobility` funded by BAYLAT/FAPESP Call
8. **São Paulo State University (UNESP)** Mar. 2010 – Dec. 2010
   Adjunct Professor *Bauru, Brazil*
   College of Engineering Bauru (FEB), Civil Engineering undergraduate course.
9. **University of São Paulo (USP-EESC)** Feb. 2009 – Jun. 2009
   Graduate Assistant *São Carlos, Brazil*

10. **University of São Paulo (USP-EESC)** Feb. 2006 – Jun. 2006
Graduate Assistant *São Carlos, Brazil*

3.2 Professional Experience

1. **CCR Highway RioSP (Via Dutra)** Apr. 2025 – Nov. 2025
Technical Consultant – Transportation Engineering Projects *São Paulo, Brazil*
Validate the operational speed of trucks on Via Dutra's new descending lane, in Rio de Janeiro (BR-116 highway).

2. **CCR Highway RioSP (Via Dutra)** Jun. 2023 – Dec. 2023
Technical Consultant – Transportation Engineering Projects *São Paulo, Brazil*
Evaluated site conditions to determine optimal placement of truck escape ramps on Via Dutra's new descending lane, in Rio de Janeiro (BR-116 highway). Simulated operational scenarios to validate design effectiveness.

3. **ARTERIS Autopista Litoral Sul (ALS)** Nov. 2019 – Dec. 2019
Technical Consultant – Transportation Engineering Projects *Curitiba, Brazil*
Directed field testing of BR-376's km 667 truck escape ramp, developing protocols and analyzing performance metrics for loaded vehicles at multiple approach speeds, with findings implemented in concessionaire safety standards[1]. Delivered a detailed technical assessment of ramp functionality under real-world conditions.

4. **University of São Paulo (USP-EESC)** Feb. 2013 – Jun. 2014
Research Assistant (Laboratory Specialist) *São Carlos, Brazil*
Develop scientific research in projects led by faculty, with didactic-scientific and extension focus.

5. **Transport Engineering Consultants Ltd. (TECTRAN)** Apr. 2012 – Dec. 2012
Consultant in Transport Planning and Engineering *Belo Horizonte, Brazil*
Led the development and integration of structured databases to support EPELT, the Transport Logistics Planning Office of the Minas Gerais State Secretariat.

6. **Institute of Mathematical and Computer Sciences (ICMC-USP)** Mar. 2012 – Apr. 2012
Civil Engineer *São Carlos, Brazil*
Executed AutoCAD-based infrastructure digitization, oversaw routine building maintenance, and participated in the supervision of ongoing construction projects at ICMC.

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4 TEACHING EXPERIENCE

4.1 Lecturer at the University of São Paulo (USP)

4.1.1 Undergratuate

1. **STT0618 - Air Transport** **2014**
4th year elective transport course in Civil Engineering curriculum. Designed the lecturers, exercise and lab sessions. Small classroom of 10+ students.

2. **STT0403 - Airports, Ports and Waterways** **2015–present**
5th year compulsory transport course in Civil Engineering curriculum. Designed the lecturers and exercise sessions. Taught in classes of 50+ students.

3. **STT0408 - Fundamentals of Transportation Engineering** **2015–present**
3rd year compulsory transport course in Civil Engineering curriculum. Designed and delivered this core transport course, integrating lectures, exercises, and applied lab sessions. Taught classes of 50+ students using inverted classroom strategies and project-based learning, fostering active student engagement and applied problem-solving. The course received an average student rating of 4.5/5.0, reflecting strong satisfaction and engagement.

4. **STT0628 - Traffic Engineering and Road Traffic Simulation** **2015–present**
3rd year elective transport course in Civil Engineering curriculum. Designed the lecturers, exercise and lab sessions. Small classroom of 10+ students. Presents the fundamental theory of traffic simulation, while equipping students to apply concepts in practice and develop key technical skills.

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

5. **1800093 - Final Undergraduate Project** **2016–present**
   5th year compulsory transport course in Civil Engineering curriculum. My role involves supervising and guiding students through the development of their final engineering projects, with a focus on applying transport engineering concepts to real-world problems. I support students in defining research questions, conducting technical analyses, and producing professional-grade reports, while fostering independent learning and critical thinking. I have supervised 25+ projects in this course.

6. **STT0412 - Computational Tools Applied to Civil Engineering** **2016–present**
   2nd year elective transport course in Civil Engineering curriculum. I designed and implemented this course to introduce students to computational thinking and practical toolsets for engineering problem-solving. The course encourages students to develop programming skills and apply digital tools—such as spreadsheets, CAD, GIS, and programming languages—to real-world challenges in civil and transport engineering. Small classroom of 20+ students.

7. **1800122 - Supervised Internship** **2019–present**
   5th year compulsory transport course in Civil Engineering curriculum. My role involves supervising and evaluating student internships conducted in professional engineering environments. I oversee each student's engagement with the host company, assess their performance, and ensure that the internship experience aligns with academic and professional learning objectives. I have supervised 15+ students.

8. **STT0610 - Logistics and Transportation** **2024–2025**
   4th year elective transport course in Civil Engineering curriculum. Redesigned course curriculum to address contemporary logistics and supply chain challenges: AI-driven logistics tools, GIS-based route planning, and Green logistics best practices. Small classroom of 10+ students.

9. **STT0631 - Logistics in construction** **2026–present**
   This elective course integrates theory and practice to prepare students for the efficient management of logistical chains in civil construction projects. Over the semester, students will develop an understanding of the fundamental supply concepts, grasp the scope and challenges of providing the necessary resources based on each project's scale and characteristics, and learn to identify the factors that impact construction logistics — from cost and scheduling concerns to environmental and regulatory constraints.

10. **1800123 - Technical Drawing** **2026–present**
    1st year compulsory course in Civil Engineering curriculum. The objective of this course is to elucidate the concept and standards of design, as well as to present digital tools for Engineering projects and the use of georeferenced maps, as well as the use of BIM and 3D visualization software. Classroom with 60 students.

4.1.2 Graduate

1. **STT5874 - Advanced Topics in Traffic Engineering** **2015–present**
   Elective course in the Transportation Engineering Program. Coordinate the course, designed the lectures and lab sessions. Small classroom of 10+ students. Provides a foundation in traffic simulation theory and engages students in applying concepts through real-world scenarios and hands-on technical training.

2. **STT5898 - Applied Statistics for Transportation Engineering** **2015–present**
   Elective course in the Transportation Engineering Program. Coordinate the course, designed the lectures and exercises. Small classroom of 15+ students. This course serves as a foundational milestone, equipping students with the core statistical methods required for graduate-level study and research.

3. **STT5900 - Multivariate Data Analysis Applied to Transportation Engineering** **2015–present**
   Elective course in the Transportation Engineering Program. Coordinate the course, designed the lectures and exercises. Small classroom of 15+ students. Course introducing AI techniques using R—such as neural networks, clustering, PCA, decision trees, and genetic algorithms—applied to each student's own dataset. The course culminates in the submission of an article presenting the dataset, methodology, and preliminary results.

4. **STT5859 - Transport Technology** **2016–present**
   Compulsory course in the Transportation Engineering Program. This core course is jointly taught by four professors and provides a comprehensive foundation in transportation planning and operations. Designed for students at all levels, it offers a structured, level-based approach to essential concepts and methodologies in the field. Small classroom of 15+ students.

5. **STT5905 - Bibliographic Research for Transportation Systems** **2017–present**
   Compulsory course in the Transportation Engineering Program. A core course that guides and encourages students to develop a comprehensive literature review, fostering critical analysis and familiarity with key academic sources in the field. Small classroom of 15+ students.

6. **STT5909 - Data Analysis Laboratory with Open-Source Software R** **2017**
   Elective course in the Transportation Engineering Program. Coordinate the course, designed the lectures and exercises. Small classroom of 10+ students. This course was designed to provide a foundational introduction to R programming for solving transport engineering problems.

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5 SUPERVISION

- **PhD Students:** 6 (3 completed, 3 ongoing)
- **MSc Students:** 15 (12 completed, 3 ongoing)
- **Scientific Initiation:** 18 (16 completed, 2 ongoing)
- **Undergraduate Projects:** 25 completed

5.1 Completed

1. Ph.D. (2025-12-08) : Leandro Arab Marcomini "*Classification of trucks by axles using Deep Learning and a Large Multimodal 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 multilane highways*"
14. M.Sc. (2017-08-10): Elaine Rodrigues Ribeiro "*Exploratory method analysis using Wavelet to detect patterns and anomalies in traffic history data*"

5.2 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*"

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6 RESEARCH INCOME

I have secured over **BRL 18,600,000**[2] (approximately USD 3,381,818 | EUR 2,952,381 | AUD 5,314,286) in research funding, during my tenure at USP, with projects spanning intelligent transport systems and sustainable mobility solutions.

1. **CCD Sustainability and Innovation in Road Infrastructure** — BRL 8,000,000
   Pavement Recycling as a Pillar of Decarbonization - Centers for Science for Development (CCD) — 2025–2030
   Role: Co-Principal Investigator
   Sponsor: FAPESP Grant (2025/07146-8), Brazil
2. **Redesign and Validate the Truck Escape Ramp on the BR-116 (Via Dutra)** — BRL 180,000
   Role: Principal Investigator — 2025–2025
   Sponsor: Group CCR Highways (RioSP), Brazil
3. **Artificial Intelligence Recreating Environments (IARA)** — BRL 10,000,000
   Applied Research Centers Program (CEPID) — 2023–2028
   Role: Research Collaborator
   Sponsor: FAPESP Grant (Process 20/09835-1), Brazil
4. **Rethinking traffic modeling in transport networks for the next generation of smart/connected cities** — BRL 72,000
   Role: Principal Investigator — 2023–2026
   Sponsor: CNPq Consolidated Research Groups Grant (Process 409087/2023-8), Brazil
5. **Artificial Intelligence: development of tools for urban mobility** — BRL 40,000
   Role: Principal Investigator — 2023–2026
   Sponsor: CNPq Research Productivity Grant (Process 311964/2022-2), Brazil
6. **Evaluation of Truck Escape Ramp on the BR-116 (Via Dutra)** — BRL 90,000
   Role: Principal Investigator — 2023–2023
   Sponsor: Group CCR Highways (RioSP), Brazil
7. **Innovative Control Strategies for Sustainable Mobility in Smart Cities** — EUR 8,000
   Role: Co-Principal Investigator — 2021–2021
   Sponsor: University of Zagreb (UNIZG), Croatia
8. **Visiting Professorship** — AUD 150,000
   Role: Principal Investigator — 2019–2019
   Sponsor: CAPES-Print Program (Process 88887.371506/2019-00), Brazil
9. **Site Optimization for Truck Escape Ramps on the BR-376** — BRL 150,000
   Role: Principal Investigator — 2019–2019
   Sponsor: ARTERIS Autopista Litoral Sul (ALS), Brazil
10. **Image-based method for axle detection and truck classification** — BRL 15,000
    Role: Principal Investigator — 2018–2022
    Sponsor: CNPq Universal Grant (Process 436954/2018-4), Brazil

[2] Exchange rates used: EUR 1.00 ≈ BRL 6.30; USD 1.00 ≈ BRL 5.50; AUD 1.00 ≈ BRL 3.50.

11. **Application of deep learning in intelligent traffic control system** EUR 8,500
Role: Co-Principal Investigator 2018–2018
Sponsor: University of Zagreb (UNIZG), Croatia

12. **Studies aimed at promoting sustainable and safe urban mobility** BRL 20,000
Role: Co-Principal Investigator 2013–2016
Sponsor: CAPES/FCT Program (Process 39/2017), Brazil

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7 PUBLICATIONS

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

7.1 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>

7.2 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>

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>

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>

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>

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>

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>

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>

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>

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>

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>

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>

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>

13. OLIVEIRA, J.V.M.; LAROCCA, A.P.C.; ARAUJO NETO, J.O.; **CUNHA, A.L.**; SANTOS, M.C.; SCHAAL, 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>

14. DE OLIVEIRA, J.V.M.; LAROCCA, A.P.C.; DE ARAÚJO NETO, J.O.; CUNHA, A.L.; DOS SANTOS, M.C.; SCHAAL, 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>

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>

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>

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>

18. LAROCCA, A.P.C.; ARAÚJO NETO, J.O.; TRABANCO, J.L.A.; BARBOSA, A.C.B.; **CUNHA, A.L.B.N.**; SCHAAL, 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>

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>

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>

7.3 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.
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8 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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9 PROFESSIONAL SERVICES

- **Academic Service:** Member of Department Council of Transport Engineering, Research and Innovation Committee (CPqI), Graduate Program Coordination Committee in Transport Engineering (CCP-ET), Culture and University Extension Committee (CCEx), Center for Educational Technology in Engineering (CETEPE),
- **Reviewer:** Transportation Research Part E, Sustainability, Case Studies on Transport Policy, Transportes, Sensors, Promet - Traffic & Transportation Journal, Geo-spatial Information Science, Journal of the International Association of Traffic and Safety Sciences (IATSS), Drones, Engineering Applications of Artificial Intelligence (EAAI), Sensors, Sustainable Cities and Society.
- **Scientific Committee:** Transportation Research Board TRB, IEEE Intelligent Transportation Systems Society (ITSS), National Association for Research and Education in Transportation (ANPET), International Scientific Conference (ZIRP), International Symposium ELMAR, The Science and Development of Transport (TRANSCODE).

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10 TECHNICAL SKILLS

- **Programming languages:** C++, R, Python, Julia, HTML, CSS, JavaScript, Matlab
- **Tools:** CAD, Civil-3D, OpenCV, TSIS-CORSIM, AIMSUN, SUMO, VISSIM, MATSim, QGIS
- **Languages:** Portuguese (native), English (advanced), Spanish (basic)