



Research Focus

I am interested in studying the applications of network science, machine learning and pattern mining in the context of mobility, security, and sustainability.

Areas of Expertise:

Data Science
Network Science
Computational Social Science
Urban Dynamics
Virtual Robotics
Gamification
Programming Learning

Last [Google Scholar](#) alt-metrics:
h-index: 13; 463 citations

Development:

Python, JAVA, C & C++
SQL, NoSQL(MongoDB)
HTML & CSS JavaScript
UML & SysML, BPMN, ArchiMate
CAD, \LaTeX , Assembly (MIPS, 8086)
Git, SDN, STP, ICMP, ARP, DNS

COURSEWORK

GRADUATE

Data Science
Natural Language
Autonomous Agents & Multi-Agent Sys.
Planning, Learning & Int. Decision-Making
Machine Learning
Network Science
Information Systems Management
Information Visualization
3d Programming

UNDERGRADUATE

Software Engineering I & II
Information Processing
Algorithms & Data Structures
Parallel & Distributed Programming
Object Oriented Programming
Signal Theory
Network Programming
Digital Networks I, II & III
Management & Enterprise Accounting

EXPERIENCE

MINISTRY OF EDUCATION , SCIENCE AND INNOVATION |

ADVISER TO SECRETARY OF STATE FOR SCIENCE

Nov. 2024 - Present | Lisbon, Portugal

- Focus on strategy and data extraction, integration and processing with ML.

INESC-ID & LNEC | RESEARCH FELLOWSHIP

Sep. 2020 - Oct. 2024 | Lisbon, Portugal

- Research on multimodal urban data analysis for improving public transportation in face of the demand change. (**ILU project**)
- Research on AI for data integration on freight transportation with aim of contributing for a digital marketplace for multimodal logistics. (**ADMIRAL project**) and in **management committee**.
- Proposal writing for several National and European grants.

INSTITUTO SUPERIOR TÉCNICO, UNIVERSITY OF LISBON |

TEACHING ASSISTANT

Feb. 2020 - Present | Lisbon, Portugal

- Fall 2023 Network Science;
- Spring 2023 Artificial Intelligence;
- Fall 2022: Machine Learning (ML); Fundamentals of Programming;
- Spring 2020 - 2022: Data Administration in Information Systems;
- Spring 2022: Systems Analysis and Modeling;
- Spring 2022: Data Bases;
- Fall 2021: Network Science; Systems Analysis and Modeling;
- Fall 2020 & Spring 2025: Information Processing and retrieval.

INSTITUTO DE TELECOMUNICAÇÕES | UNDERGRADUATE RESEARCH ASSISTANT

Nov. 2018 - Apr. 2019 | Lisbon, Portugal

- Worked on web scrapping and text extraction algorithms.

EDUCATION

PHD. IN COMPUTER SCIENCE

INSTITUTO SUPERIOR TÉCNICO, UNIVERSITY OF LISBON

Ongoing | Lisbon, Portugal

Advisor: Professor Rui Henriques, PhD and Professor Francisco C. Santos PhD and Elisabet Arsénio PhD; Working on Network Science and Machine Learning development. **GPA: 19/20;**

MSC. IN INFORMATION SYS. AND COMPUTER ENGINEERING

INSTITUTO SUPERIOR TÉCNICO, UNIVERSITY OF LISBON

Nov. 2021 | Lisbon, Portugal

Advisor: Professor Rui Henriques, PhD and Dr. Elisabete Arsenio, PhD; Dissertation: Modeling and assessing resilience in multimodal transport systems; Focus on data and network science.

Overall GPA: 18/20; Dissertation Grade: 19/20

BSC. IN COMPUTER ENGINEERING

SCHOOL OF TECHNOLOGY AND ARCHITECTURE AT INSTITUTO UNIVERSITARIO DE LISBOA (ISCTE-IUL)

Jul. 2019 | Lisbon, Portugal

Was students delegate for Computer Engineering degree;

GPA: 17/20.

EDUCATION CONT.

DEEP LEARNING FOR AI AND COMPUTER VISION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Aug. 2019 | Cambridge, MA (On Campus)

Was awarded a scholarship. Summer course to expand knowledge and discuss perspectives with computer vision researchers. Developed expertise in CV tasks such as object recognition, scene recognition and human motion categorization. Lectured by Professors Antonio Torralba and Phillip Isola

DESIGNING EFFICIENT DEEP LEARNING SYSTEMS

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Jul. 2018 | Cambridge, MA (On Campus)

Summer course focused on understanding the high and low level considerations, hardware and softwares wise when implementing a DL systems and how to optimize them. Lectured by Professor Vivienne Sze

EPIGENETICS: FOUNDATIONS AND HUMAN HEALTH

INSTITUTO SUPERIOR TÉCNICO UNIVERSITY OF LISBON

Nov. 2020 and Mar. 2021 | Online

ENTREPRENEURSHIP: FROM BUSINESS IDEA TO ACTION

KING'S COLLEGE LONDON

Aug. 2024 | Online

INTRODUCTION TO BUSINESS MANAGEMENT

KING'S COLLEGE LONDON

Mar. 2022 | Online

STATISTICAL DATA ANALYSIS FOR GENOME SCALE BIOLOGY

EMBL

Jun. 2022 | Brixen, Italy

INTERNATIONAL SCHOOL ON MODERN PHYSICS AND RESEARCH "THE QUANTUM LEGACY"

NATIONAL LABORATORY OF FRASCATI (LNF) OF THE ISTITUTO NAZIONALE DI FISICA NUCLEARE (INFN)

Feb. 2016 | Frascati (Rome), Italy

Lectures on Modern Physics and its applications in Society.

More at: <http://edu.lnf.infn.it/inspyre-2016/>

YA-FIRST STEP, ENTREPRENEURSHIP PROGRAM

ISCTE-IUL BUSINESS SCHOOL

Jul. 2012 | Lisbon, Portugal

Learned concepts of Finance, Marketing and Investment analysis. Proposed the plan for a bike sharing service in Lisbon.

INTRODUCTION TO PYTHON WITH ARTIFICIAL INTELLIGENCE APPLICATIONS

NOVA UNIVERSITY, INFORMATION MANAGEMENT SCHOOL (NOVA IMS)

Jul. 2017 | Lisbon, Portugal | GPA: 20/20

INTERNSHIP IN DESIGN AND RAPID PROTOTYPING OF COMPONENTS USING 3D DRAWING TOOLS

INSTITUTO SUPERIOR TECNICO, UNIVERSITY OF LISBON

Jul. 2016 | Lisbon, Portugal

RADIO SCHOOL

UNIVERSITY OF MINHO

Jul. 2012 | Braga, Portugal

PUBLICATIONS

JOURNAL

1. Aparicio, J. T., Arsenio, E., Santos, F. C., & Henriques, R. (2024). Using Dynamic Knowledge Graphs to detect Emerging Communities of Knowledge. **Knowledge Based Systems** (Impact Factor: 8.8, Q1)
2. Aparicio, J. T., Arsenio, E., Santos, F. C., & Henriques, R. (2024). Walkability defined neighborhoods for sustainable cities. **Cities** (Impact Factor: 6.7, Q1)
3. Costa, C. J., Aparicio, M., Aparicio, S., & Aparicio, J. T. (2024). The democratization of artificial intelligence: Theoretical framework. *Applied Sciences*, 14(18), 8236. (Impact Factor: 2.5, Q2)
4. Aparicio, J. T., Arsenio, E., Santos, F. C., & Henriques, R. (2023). Spatiotemporal trip profiles in public transportation reveal city modular structure. **Transportation Research Interdisciplinary Perspectives**, 19. (Impact Factor: 9.9, Q1)
5. Aparicio, J. T., Arsenio, E., Santos, F. C., & Henriques, R. (2022). LINES: muLtiModal traNsportation rEsilience analysis, **Sustainability** 14(13), 7891. (Impact Factor: 3.889, Q1)
6. Aparicio, J. T., Arsenio, E., & Henriques, R. (2022). Assessing Robustness in Multimodal Transportation Systems: A case study in Lisbon. In **European Transport Research Review**. (Impact Factor: 4.5, Q1)
7. Aparicio, J. T., Arsenio, E., & Henriques, R. (2021). Understanding the Impacts of the COVID-19 Pandemic on Public Transportation Travel Patterns in the City of Lisbon. **Sustainability**, 13(15), 8342. (Impact Factor: 3.889, Q1)

CONFERENCE

1. Cerqueira, S., Aparicio, J. T., Arsenio, E., & Antunes, J. P. (2024). Advancing Green and Digital Logistics through Spatio-Temporal Data Integration. European Transport Conference, 2024. **AET**
2. Aparicio J. T., Arsenio, E., & Henriques, R. (2024). Patterns Beyond Words: Understanding emotional undertone on knowledge graphs. 2024 19th Iberian Conference on Information Systems and Technologies (CISTI), 16. **IEEE** (in press)
3. González-Mendes, S, Aparicio J. T., & Costa, C. J. (2024). Predicting Bitcoin prices . WAIM 2024 - 6th Evaluating the Impact of Smart Contracts on Public Transportation: A Systematic Literature Review. 2024 19th Iberian Conference on Information Systems and Technologies (CISTI), 16. **IEEE** (in press)
4. Aparicio J. T. & Costa, C. J. (2024). Agent-Based Model for Predicting the Impact of Generative AI. 2024 19th Iberian Conference on Information Systems and Technologies (CISTI), 16. **IEEE** (in press)
5. Costa, C.J, Aparicio J. T. & Aparicio M. (2024). Socio-Economic Consequences of Generative AI: A Review of Methodological Approaches. 2024 19th Iberian Conference on Information Systems and Technologies (CISTI), 16. **IEEE** (in press)
6. Aparicio, J. T., Arsenio, E., Santos, F. C., & Henriques, R. (2023). Assessing Walkability Conditions Across Cities for Healthier Communities. European Transport Conference, 2023. **AET**
7. Aparicio, J. T., Arsenio, E., & Henriques, R. (2023). tex2net: A Package for Storytelling Using Network Models. In Proceedings of the 41st **ACM** International Conference on Design of Communication (pp. 119-125). (Rank B1)
8. Aparicio, J. T., Karatsolis, A. & Costa, C. J. (2023). Network visualization techniques for story charting The case of a book in Portuguese. WAIM 2023 - 5th Workshop on Artificial Intelligence and Management. 2023 18th Iberian Conference on Information Systems and Technologies (CISTI), 16. **IEEE**
9. Aparicio, J. T., Timenko, V. & Costa, C. J. (2023). Explaining Wikipedia page similarity using network science. In Lecture Notes in Networks and Systems. **Springer**
10. Aparicio, J. T., Tiam-Lee, T. J. & Costa, C. J. (2023). Polarization and similarity of news in Portugal and the Philippines. In Lecture Notes in Networks and Systems. **Springer**
11. Aparicio S., Aparicio, J. T., & Aparicio, M. (2023). Multidimensional and Multilingual Emotional analysis. In Lecture Notes in Networks and Systems. **Springer**
12. Severes, B., Carreira, C., Vieira, A. B., Gomes, E., Aparício, J. T., & Pereira, I. (2023). The Human Side of XAI: Bridging the Gap between AI and Non-expert Audiences. In Proceedings of the 41st **ACM** International Conference on Design of Communication (pp. 126-132). (Rank B1)

13. Cesario, F., Costa, C. J., Aparicio, M., & Aparicio, J. T. (2023). Blockchain Technology Adoption: Factors Influencing Intention and Usage. In 31ST INTERNATIONAL CONFERENCE ON INFORMATION SYSTEMS DEVELOPMENT (ISD2023) (Rank A), and then published in *International Journal of Information Systems and Project Management* (Q2)
14. Aparicio, J. T., Aparicio, M., & Costa, C. J. (2022). Design Science in Information Systems and Computing. In *Lecture Notes in Networks and Systems*. Springer
15. Aparicio, J. T., Arsenio, E., & Henriques, R. (2022). Advances in the spatiotemporal profiling of public transport users in the city of Lisbon. In *Transportation Research Procedia*, 2022. Elsevier
16. Aparicio, J. T., Romão, M & Costa, C. J. (2022). Predicting Bitcoin prices . WAIM 2022 - 4th Workshop on Artificial Intelligence and Management. 2022 17th Iberian Conference on Information Systems and Technologies (CISTI), 16. IEEE
17. Aparicio, J. T., Arsenio, E., & Henriques, R. (2021). Assessing Robustness in Multimodal Transportation Systems: A case study in Lisbon. In *European Transport Conference 2021*. (Rank B)
18. Costa, C., Aparicio, M., & Aparicio, J. (2021, October). Sentiment Analysis of Portuguese Political Parties Communication. In *The 39th ACM International Conference on Design of Communication* (pp. 63-69). (Rank B1)
19. Aparicio, J. T., Trinca, M., Castro, D., Henriques, R. (2021). Vehicle Smart Grid Allocation using Multi-Agent Systems sensitive to Irrational Behavior and Unstable Power Supply. WAIM 2021 - 3rd Workshop on Artificial Intelligence and Management. 2021 16th Iberian Conference on Information Systems and Technologies (CISTI), 16. IEEE
20. Aparicio, J. T., Sequeira, J. S., Carlos, C. J. (2021). Emotion analysis of Portuguese Political Parties Communication over the covid-19 Pandemic. WAIM 2021 - 3rd Workshop on Artificial Intelligence and Management. 2021 16th Iberian Conference on Information Systems and Technologies (CISTI), 16. IEEE
21. Costa, C. J., & Aparicio, J. T. (2021). A Methodology to Boost Data Science in the Context of COVID-19. In *Advances in Parallel & Distributed Processing, and Applications* (pp. 65-75). Springer.
22. Costa, C. J. & Aparicio, J. T. (2020). POST-DS: A methodology to boost data science. WAIM 2020 - 2nd Workshop on Artificial Intelligence and Management. 2020 15th Iberian Conference on Information Systems and Technologies (CISTI), 16. IEEE
23. Aparicio, Joao Tiago, Pereira, S., Aparicio, M., & Costa, C. J. (2019). Learning Programming Using Educational Robotics. 2019 14th Iberian Conference on Information Systems and Technologies (CISTI), 16. IEEE
24. Aparicio, S., Aparicio, J. T., & Costa, C. J. (2019). Data Science and AI: Trends Analysis. 2019 14th Iberian Conference on Information Systems and Technologies (CISTI), 16. IEEE
25. Aparicio, Joao Tiago, Aparicio, M., & Costa, C. J. (2018). A Virtual Robot to support Programming Learning. ISR 2018 - 50th International Symposium on Robotics, 139142. IEEE (Rank A)
26. Aparicio, Joao Tiago, & Costa, C. J. (2018). A virtual robot solution to support programming learning an open source approach. 2018 13th Iberian Conference on Information Systems and Technologies (CISTI), 16. IEEE
27. Costa, C. J., Aparicio, M., Aparicio, S., & Aparicio, J. T. (2017). Gamification usage ecology. *Proceedings of the 35th ACM International Conference on the Design of Communication*, 19. ACM (Rank B1)
28. Pereira, R., Costa, C. J., & Aparicio, J. T. (2017). Gamification to support programming learning. 2017 12th Iberian Conference on Information Systems and Technologies (CISTI), 16. IEEE

PREPRINTS

1. Aparicio, J. T., Aparicio, M., Aparicio, S., & Costa, C. J. (2024). Predicting the Impact of Generative AI Using an Agent-Based Model. arXiv preprint arXiv:2408.17268.
2. Costa, C. J., Aparicio, J. T., Aparicio, M., & Aparicio, S. (2024). Gamification and AI: Enhancing User Engagement through Intelligent Systems. arXiv preprint arXiv:2411.10462.
3. Costa, C. J., Aparicio, J. T., & Aparicio, M. (2024). Socio-Economic Consequences of Generative AI: A Review of Methodological Approaches. arXiv preprint arXiv:2411.09313.

REVIEWER JOURNALS: SUSTAINABLE CITIES AND SOCIETY, NATURE SCIENTIFIC REPORTS, JOURNAL OF INNOVATION & KNOWLEDGE, TRAVEL BEHAVIOUR AND SOCIETY, RESEARCH IN TRANSPORTATION BUSINESS & MANAGEMENT, TRANSPORTATION RESEARCH INTERDISCIPLINARY PERSPECTIVES, EUROPEAN JOURNAL OF MANAGEMENT STUDIES.
CONFERENCES: TRA22 CISTI20, CISTI21, ADBIS.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Association for Computing Machinery (**ACM**) since 2016
- Institute of Electrical and Electronics Engineers (**IEEE**) since 2016

AWARDS

2023	University	Best Master thesis award at Universidade de Lisboa - RedeMOV
2022	School	IST Diploma of Excellence in Teaching
2022	-	INESC-ID PhD Fellowship
2021	School	IST Diploma of Academic Merit
2020	National	EDP TOP 3 - Local EDP University Challenge Portugal 2020
2020	University	ISCTE Academic Merit Diploma
2019	School	ISTA TOP Talent Award (Academic merit award) 2018-2019
2018	School	ISTA TOP Talent Award (Academic merit award) 2017-2018
2017	School	ISTA TOP Talent Award (Academic merit award) 2016-2017
2017	School	ISCTE-IUL Research Week Finalist
2016	National	4 th Place, National Robotics Competition: Robocup Rescue Maze (Portugal)
2014	Scholarship	2 nd Place, FCUL Rally Pro (Programming Competition)
2014	National	3 rd Place, National Robotics Competition: Robocup Rescue (Portugal)
2013	National	3 rd Place, National Robotics Competition: Robocup Rescue (Portugal)
2012	International	Best Presentation Award: Worldwide Robotics Competition: Robocup Junior
2012	National	3 rd Place, National Robotics Competition: Robocup Rescue (Portugal)

VOLUNTEERING

ACM EUROSIGDOC | WEBMASTER

Sep. 2022 - Present | Europe

AET YOUNG RESEARCHERS' AND PRACTITIONERS' FORUM | MEMBER

Sep. 2024 - Present | Europe

ACM STUDENT CHAPTER AT ISCTE-IUL | BOARD MEMBER

Feb. 2019 - Nov. 2022 | Lisbon, Portugal

ACM STUDENT CHAPTER AT ISCTE-IUL | CHAIR

Dec. 2016 - Feb. 2019 | Lisbon, Portugal

Organized events and open lectures, managed teams and participated in coding competitions.

IEEE STUDENT BRANCH ISCTE-IUL | CHAIR OF THE ROBOTICS AND AUTOMATION SOCIETY

Oct. 2016 - Jul. 2019 | Lisbon, Portugal

MENTOR

CODERDOJO-LX

Apr. 2015 - Oct. 2017 | Lisbon, Portugal

Taught the fundamentals of programming and electronics for project-based learning to children between 6 and 17 years old.

TALKS

1. 2023 Paper presentation at INESC ESR Talks: Advances in User Journey profiles in Lisbon
2. 2022 Invited Paper presentation at Outsystems AI Research: Assessing resilience in Multimodal Transportation Systems
3. 2020 - Master Lecture: Creativity in Robotics: Lecture for a master students in the context of computational creativity @ ISCTE-IUL ISTA
4. 2019 - Master Lecture: Open Source Robotics as booster to Creativity: Showcased practical applications of Robotics as a mean to encourage the making of original projects @ ISCTE-IUL ISTA
5. 2018 - Master Lecture: Computing Creativity & Robotics: Introduced robotics in the context of a Creative Computing class, with several examples of Open Source hardware solutions @ ISCTE-IUL ISTA
6. 2017 - Master Lecture: Logistics & Robotics: Introduced robotics in the context of logistics to the Information Systems and ERP course students at the ISCTE Business School @ ISCTE-IUL IBS
7. 2017 - Introduction to Robotics using Arduino: Workshop about the use of Arduino, illustrating computer programming concepts @ School of Technology at IPS
8. 2017 - SmartTalk: Robotics: Presented some elements of robotics in context of education and demonstration of a prototype for a firefighting robot competition. @ ISLA Santarem