Francisco Caldas

Curriculum Vitae

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Education and Qualifications

2022-2026	Ph.D.	Informatics	Nova School of Science and Technology
2018-2021	M.Sc.	Applied Mathematics (Probabilities and Statistics)	Instituto Superior Técnico
2015-2020	B.Sc.	Applied Mathematics and Computation	Instituto Superior Técnico

Scientific Contributions

Publications

1. **Caldas, F.**, C. Soares, C. Nunes, M. Guimarães and R. Ventura (2021), Conjunction Data Messages behave as a Poisson Process. *IJCAI 2021 Workshop on Space Safety*
2. Abay, R.,**F. Caldas**, M. Filipe, M. Guimarães. (2021) Benchmarking machine learning models for collision risk prediction in low-earth orbit. *ESA 8th Conference on Space Debris*
3. **Caldas, F.**, C. Soares (2022), A Temporal Fusion Transformer for Long-term Explainable Prediction of Emergency Department Overcrowding, *NeurIPS 2022 Time-series for Health (TS4H) Workshop*
4. **Caldas, F.**, C. Soares (2023), Improving Orbit Prediction in LEO with Machine Learning using Exogenous Variables, *IAC 74'*

International Presentations

2020	AI4EU Presentation on the Effects of the Covid-19 Lockdown on Pollution levels in Europe
2021	IJCAI workshop AI4Spacecraft Safety - Presentation of the work "Conjunction Data Messages (CDMs) behave as Poisson Process" where a graphical probabilistic model was modeled to predict the arrival time and probability of CDMs close to Time of Closest Approach (TCA)
2022	Machine Learning for Health (ML4H'22) Symposium poster presentation on emergency department overcrowding and ML approaches to long-term prediction
2023	IAC 74' (74^{th} International Astronautical Conference) presentation on improving orbit prediction in LEO with machine learning using exogenous variables

Working papers under revision or review

1. **Caldas, F.**, M. Vieira, and C. Soares (n.d.). "Evolution of air quality in Europe during COVID-19 lockdowns".
2. **Caldas, F.** and C. Soares (n.d.). "Machine Learning in Orbit Estimation: a Survey".
3. Pereira, M. , Tripa, L., Lima, N., **Caldas, F.** and C. Soares (n.d.). "Advancing Solutions for the Three-Body Problem through Physics-Informed Neural Networks".

Participation in International Projects

2020	INSPIRED 2020: "Interstrellar Re-factory", Technische Universität Darmstadt (TU Darmstadt) and UNITE.
2023-Ongoing	Tardis Project: Trustworthy And Resilient Decentralised Intelligence For Edge Systems

Professional activities

Certificates

2019 Optimal Stopping Problems and Financial Markets Online Course
2020 Agile Leadership
2022 ESA's Space Debris Training Course

Professional experience

2020-2021 Machine Learning Researcher at Neuraspace