Ana Sofia Carmo

Biomedical Engineer · **ML in Health Researcher**

Europe

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Professional Summary

Biomedical engineer and ML researcher with 5+ years of experience in clinical and biomedical data analysis. Expert in end-to-end ML workflows, including data cleaning and transformation, feature engineering, and model development pipelines. Experienced in creating standardized frameworks, and collaborating with cross-functional teams to translate research into actionable insights.

Professional Experience

Feb 2021–Present **Biomedical Engineer** at Telecommunications Institute (Lisbon, Portugal)

- Applied machine learning and deep learning methods to physiological data for diagnostics and early risk prediction in epilepsy [1,2,3].
- Prepared complex biomedical datasets for ML, including cleaning, structured transformation, and feature extraction suitable for advanced modeling.
- Designed and implemented a modular framework for standardized and reproducible development of ML models, accelerating deployment [1] (codebase).
- Led interdisciplinary research on physiological monitoring and AI-enabled epilepsy care, supporting evidence-driven insights for clinical decision support.
- Coordinated development and validation of two cross-functional projects with physicians and engineers, now deployed in hospital and academic setting [4,5].

Dec 2024–Present **Consulting Medical Data Scientist** at Hospital de Santa Maria (Lisbon, Portugal)

- Developed signal processing pipelines for cardiac data, including data cleaning and feature extraction, for time-series recordings.
- Conducted end-to-end data analyses for clinical trial reporting, focusing on biomarker evaluation and treatment outcome assessment [6].
- Worked in close collaboration with clinicians to ensure analytical methods, assumptions, and interpretations met clinical evidence standards.

Education

Feb 2021–Jan 2026 **PhD in Biomedical Engineering** at Instituto Superior Técnico (Lisbon, Portugal)

Sep 2015–Jan 2021 **Integrated MSc in Biomedical Engineering** at Instituto Superior Técnico

Additional Experience & Achievements

Mentorship

- Supervised 100+ MSc theses and undergraduate research projects focused on physiological signal processing, machine learning, and experimental validation.
- Delivered 80+ hours of hands-on labs in biomedical instrumentation, signal processing, and ML applied to health.

Additional Skills

Tech Stack:	Python, scikit-learn, PyTorch, ML experiment tracking (MLflow, upskilling), Docker
Documentation:	Open Science practices, Standardized reporting, Version control (Git/GitHub)
Outreach:	Event organization, Content creation (Canva, Figma), Poster preparation
Languages:	Portuguese (native), English (C2), German (B1; eager to achieve fluency)

Selected Publications

[1] **A. S. Carmo**, et al., “SeFEF: A Seizure Forecasting Evaluation Framework,” Oct. 2025, *arXiv preprint* arXiv:2510.112751.

[2] **A. S. Carmo**, et al., “Automatic Detection of Tonic-Clonic and Myoclonic Epileptic Seizures Using Prefrontal Electroencephalography (EEG),” in *IEEE 34th Int’l Symposium on Computer-Based Medical Systems (CBMS)*, Aveiro, Portugal: IEEE, June 2021, pp. 19-24.

[3] J. Saraiva, M. Abreu, **A. S. Carmo**, et al., “Data Augmentation, Multimodality, Subject and Activity Specificity Improve Wearable Electrocardiogram Denoising with Autoencoders,” presented at the *16th Int’l Conf. on Bio-inspired Systems and Signal Processing*, Aug. 2024, pp. 133–145.

[4] **A. S. Carmo**, et al., "A Magnetic Field-Based Wearable Respiration Sensor for Real-Time Monitoring During Pulmonary Rehabilitation," *IEEE Transactions on Biomedical Engineering*, vol. 71, no. 7, pp. 2243-2252, Jul. 2024 (SJR Q1 and IF 4.5)

[5] **A. S. Carmo**, et al., "EpiBOX: An Automated Platform for Long-Term Biosignal Collection," *Frontiers in Neuroinformatics*, vol. 16, p. 837278, May 2022 (SJR Q1 and IF 3.53)

[6] S. Gago, **A. S. Carmo**, et al., ”Autonomic nervous system modulation and cardiac instability evaluation in drug-resistant epilepsy patients submitted to VNS Therapy™,” Proc. of the 36th Int’l Epilepsy Congress, Aug. 2025

[7] H. Plácido da Silva, P. Bota, **A. S. Carmo**, Eds., *Open Source Biomedical Engineering: Bridging the Gap Between Sensing, Processing, and Visualization*. Cham, Switzerland: Springer Nature Switzerland AG, forthcoming 2026.

For a reference regarding my position at Institute of Telecommunications please contact my Supervisor, Prof. Hugo Plácido da Silva, at hsilva@lx.it.pt.