

Federico Alscher

Co-Founder | Product Developer & Data Analyst | Biomedical Engineer

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PROFILE

Biomedical Engineer and co-founder focused on data analytics and deployable solutions. I lead end-to-end delivery across problem definition, requirements, data integration/cleaning, feature engineering, model training and validation, and production deployment—aligning stakeholders, timelines, and measurable outcomes. I work with Python, SQL, MATLAB, and C/C++, combining rapid prototyping with quality standards and performance measurement. I also have experience teaching machine learning and programming at the university level.

EMPLOYMENT HISTORY

May 2024 – Present

Buenos Aires, Argentina

Co-Founder | Product Developer & Data Analyst, Quanttrace

Co-founded a startup developing non-invasive, real-time sensing technologies for biomedical and environmental monitoring. Contributed across R&D, systems architecture, and AI-based analytics to bring lab-grade tools into field-ready formats.

- Delivered portable prototypes integrating sensing, UI/display, and data logging to enable on-site acquisition and faster iteration cycles.
- Built and tuned AI models (neural networks, genetic algorithms) for signal classification and trend detection, improving robustness on noisy field data.
- Implemented low-latency acquisition and analysis pipelines in MATLAB, Python, and C/C++ to support real-time feedback and reliability.
- Standardized modular codebases, automated analysis routines, and testing workflows to increase repeatability and reduce iteration time.
- Owned end-to-end delivery from requirements to validation; defined acceptance criteria and performance metrics to guide releases.

Jul 2025 – Present

Buenos Aires, Argentina

Teaching Assistant – Introduction to Machine Learning (UNSAM)

I participate in the theoretical and practical instruction of the course Introduction to Machine Learning, covering topics such as data preprocessing, linear and logistic regression, classification, clustering, basic neural networks, and model selection.

- Deliver theoretical and practical classes on regression, classification, clustering, and neural networks, integrating theory with applied Python examples.
- Guide students through model implementation, validation, and tuning, promoting good programming and modelling practices.
- Contribute to the development and update of course materials, and support the grading of assignments and exams.

Jul 2024 – Apr 2025

Buenos Aires, Argentina

Project Engineer, Neuroengineering Laboratory (ITECA/ECyT-UNSAM)

Designed and built a fully functional system for automatic detection of myocardial ischemia using ECG signals and AI — integrating signal processing, machine learning, and embedded implementation.

- Trained and validated a custom neural network under realistic testing conditions using defined clinical metrics.
- Engineered preprocessing pipelines to extract temporal and morphological features from multichannel signals, improving diagnostic reliability.

- Deployed the trained model to embedded hardware by converting it to optimized C code with live screen and LED feedback.
- Evaluated performance and documented results for reproducibility and usability in point-of-care scenarios.
- Prioritized portability, low power, and an intuitive user interface to support real-world feasibility.

Feb 2023 – Jul 2024

Buenos Aires, Argentina

P.E.F.I. Fellow, Neuroengineering Laboratory (ITECA/ECyT-UNSAM)

Joined an interdisciplinary research team to improve and validate an AI-based spike sorting tool for analyzing neural recordings — a collaborative project with FLENI aimed at enhancing surgical planning for movement disorders.

- Enhanced an existing spike classification pipeline using wavelet decomposition and genetic algorithms, increasing accuracy and robustness across datasets.
- Collaborated with clinicians at FLENI to adapt the system for intraoperative data, supporting deep brain stimulation (DBS) target validation.
- Co-authored a peer-reviewed publication in Springer Nature’s “Advances in Neuroengineering” and presented results at the Argentine Congress of Bioengineering (SABI 2023).
- Implemented and tested algorithm components in MATLAB and C#, improving data visualization and UI responsiveness across sessions.

May 2021 – Present

City of Buenos Aires, Argentina

Administrative Assistant - Ethics Committee, Fundacion CIDEA

Supported the operations of the Institutional Ethics Committee at Fundación CIDEA, a clinical research organization conducting biomedical studies in both public and private sectors. Ensured regulatory compliance, documentation integrity, and coordination with national health authorities.

- Managed ethics submissions, amendments, and approvals for clinical protocols, ensuring documentation integrity and audit readiness.
- Coordinated investigators and sponsors to ensure timely documentation and transparent communication throughout review cycles.
- Liaised with regulatory bodies including ANMAT and the Ministry of Health to facilitate inspections, audits, and procedural alignment.
- Drafted and organized meeting minutes and evaluation reports, contributing to procedural clarity and traceability.

Sep 2023 – Dec 2023

Buenos Aires, Argentina

Medical Technology Field Technician Intern, Austral University Hospital

Completed a professional internship supporting the Biomedical Engineering Department in the operation, inspection, and maintenance of medical equipment across critical care and outpatient areas.

- Performed routine checks and preventive maintenance under supervision, ensuring compliance with safety and performance standards.
- Assisted in diagnosing and resolving technical issues in medical devices, contributing to faster equipment turnaround.
- Documented service reports and collaborated with clinical and technical teams to prioritize interventions based on patient care needs.
- Gained practical understanding of hospital workflows, equipment regulations, and quality control protocols.

Aug 2020 – Feb 2023

Buenos Aires, Argentina

Assistant Teaching Fellow in Computer Science, National University of San Martín

Provided academic support for an undergraduate course in computer science, assisting in both theoretical instruction and practical coding workshops. Collaborated closely with faculty to enhance learning outcomes in programming fundamentals and algorithmic thinking.

- Guided students through problem-solving sessions in C, reinforcing core concepts in logic, control structures, and data handling.

- Reviewed and graded assignments and exams, delivering constructive feedback to support student growth and understanding.
- Contributed to the development and refinement of course materials, improving clarity and accessibility for diverse student backgrounds.
- Fostered a collaborative, inclusive environment that encouraged critical thinking and active engagement with computational challenges.

ACADEMIC LEADERSHIP

- Co-supervisor for an Electronic Engineering capstone project (UNSAM): provided methodological and technical guidance, defined objectives and milestones, and reviewed documentation and deliverables through final defense.
- Supervisor for a PEFI scholarship project (UNSAM): mentored the work plan, coordinated tasks and timeline, evaluated progress, and supported technical reporting and results writing.

EDUCATION

Feb 2018 – Apr 2025

Buenos Aires, Argentina

Master-level Degree in Biomedical Engineering, National University of San Martín

- Final project (graded 10/10): Portable system for automatic myocardial ischemia detection using ECG and neural networks.
- GPA: 8.21 / 10

TECHNICAL SKILLS

Programming: Python, MATLAB, C, C++, C#, SQL.

Data & ML: data cleaning/ETL, feature engineering, time-series analysis, model training/validation, performance metrics, experiment tracking.

Machine Learning: neural networks, genetic algorithms, classification pipelines, model selection and tuning.

Embedded Systems: real-time acquisition, firmware development, sensor integration, low-latency processing on microcontrollers.

Project & Delivery: requirements, stakeholder coordination, acceptance criteria, documentation, risk management, KPI/metrics.

Tools: Visual Studio, Arduino IDE, Simulink.

PUBLICATIONS

- Alscher, F. et al, “Algorithm and validation method for spike sorting based on wavelet analysis and a genetic algorithm”, SABI 2023, vol 114, Springer. https://doi.org/10.1007/978-3-031-61973-1_7
- Wlken, M. et al, “Neurophysiological Analysis of the Posterior Subthalamic Area in a Patient with Holmes’ Tremor”, Movement Disorders, 2024. <https://doi.org/10.1002/mds.29705>

LANGUAGES

Spanish (Native)

English (B2)