Leonardo Silvagni

Neuro Engineering student at EPFL

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Profile

Key strengths: Signal Processing, Machine Learning, Electronics.

Education

MSc	**EPFL École Polytechnique Fédérale de Lausanne**, Neuro Engineering	2024-Present
BSc	**ETSIT Politécnica de Madrid**, Biomedical Engineering. (Erasmus)	2024
BSc	**University of Padova**, Biomedical Engineering. Final mark: 110 Cum Laude/110	2021-2024

Projects and Research

Haptic Gait Guidance System for Obstacle Detection via Stereo Vision and Inertial Sensing (in progress) — 2025, Personal Project

- Focus: embedded computer vision algorithms, sensor fusion (IMU and cameras), energy optimization.

Extended Gate Transistor for biosensing application (in progress) — 2025, EPFL, Lausanne, CH

- Reworked (CAD) previous design to reduce parasitic capacitance by 45%, to improve limit of detection.
- Fabrication and testing of the devices. (cleanroom and wet/dry lab)

Machine Learning: Task prediction using fMRI data. ↗ — 2024, EPFL, Lausanne, CH

- Developed and validated Recurrent Neural Network models to deconvolve the time-courses of task paradigms from brain imaging data (fMRI) from the Human Connectome Project's task-based dataset.

Development of an ESP32 based oxypulsimeter — 2024, ETSIT, Madrid, ES

- Implemented embedded real time signal processing to extract heart rate and blood oxygen saturation from the PPG signal.

Dynamic Bayesian Models of progression in Amyotrophic Lateral Sclerosis ↗ — 2023-2024, UNIPD, Padova, IT

- Validated an existing model in the scope of *Explainable AI* for clinical data, using Dynamic Bayesian Networks.

Technical Skills

Programming Languages: Python, R, Matlab, C/C++, LaTeX

Tools: git, Torch, Pandas, Numpy, Scipy, OpenCV, Scikit-learn

Skills: Machine Learning, Electronics, CAD, Image and signal processing, FEM/COMSOL, Computer Vision, Microfabrication, Statistical Analysis

Work Experiences

Electronics Teacher, Library Giulio Bedeschi — Arzignano, VI, IT, 2018 - 2020

- Taught introductory courses on the Arduino platform and basic electronics to 20 students aged 13-18.

- Guided 25 students aged 12-16 in robotics challenges for the First Lego League competition. Team placed 4th on national level.

Tutoring and teaching assistant, University of Padova — Padova, IT — 2021 - 2024
- Peer tutored university students on the courses of *Control systems, Electronics, Linear Algebra, Physics (classical and electromagnetism), Calculus I & II*

Organizations

Lead The Future Mentorship — 2024 - 2025
Mentorship program for Italian STEM students.

Bioleap, Nucleate Italy — 2023
Informative program of 4 months about medtech and startups.

Recognitions & Awards

2025 **Bertarelli Harvard EPFL Fellowship** — Harvard, Boston, USA
Awarded a 120 000 $ fellowship (75 000 $ tuition + 45 000 $ research and living expenses) for a master thesis at Harvard Medical School.

2023 **Mille ed una lode Scholarship** — University of Padova, IT
Scholarship based on merit given to approximately the top 3% of each class.

2023-2024 **Summer Schools** ↗ — Elicsir foundation, Bologna, IT
Scholarships to attend a 10 days and a 4 days summer school with focus on machine learning, computation, cloud, bioinformatics and history of informatics.

2021-2024 **STEM degrees incentives** — University of Padova, IT
Scholarship based on merit.

Languages

English: C1 (TOEFL 112)
Italian: C2
French: A2/B1 (aim to acheive B1/B2 by early 2026)
Spanish: B1

Information

Work permit: B (Switzerland)
Driving license: Yes

Extracurriculars

Vice President and sponsoring contact for Neuro Engineering student association at EPFL (2024-2025).
Alpine Club of Italy (CAI) youth guide, parish summer-camp organizer, blood donor, IEEE member.
Enjoy hiking and mountaineering in my free time.

Lausanne, October 15, 2025

Personal Data

I hereby authorize the use of my personal data in accordance with GDPR 679/16.