Ermanno Fiorillo

Master's Student in Electrical Engineering, Information Technology and Computer Science at RWTH Aachen University

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About Me

Bioengineer and Master's student at RWTH Aachen, specializing in Electrical Engineering, IT, and Computer Science. Research experience across ML, signal processing and neuromorphic hardware implementations at Forschungszentrum Jülich, Helmholtz Institute in Aachen and Italian Institute of Technology, Genoa.
Co-founder of Young Neuromorphs, with strong interests in bridging neuroscience and next-gen computing.

Experience

Software Engineer Intern - Prophesee — Paris, France — *09/2025–Present*

- Tested current dynamic vision sensor (DVS) characterization model based on KAN over 5e6 parameters.
- Researched and trained a new model, boosting accuracy by 15%.
- Embedded and smoothly integrated the model into the sensor simulator scheme.

Student Assistant – Forschungszentrum Jülich [PGI-14] — Aachen, Germany — *11/2024–07/2025*

- Engineered analogue circuit blocks tailored for Mamba ML architecture to boost inference efficiency.
- Deployed submodules in Cadence and LTSpice, incorporating PyTorch co-simulation for enhanced circuit modelling.
- Initiated physical layout design with potential for patent filing.

AI/ML Research Project – Helmholtz Institute — Aachen, Germany — *04/2024–07/2024*

- Developed an ML pipeline to transcribe German doctors' audio, integrating grammar correction and automating dataset generation via GUI features.
- Leveraged data from 500+ patient diagnoses to support clinical integration and enhance transcription accuracy.

Software Engineer Intern – Italian Institute of Technology — Genoa, Italy — *03/2023–03/2024*

- Streamlined data collection from eye-tracking and haptic sensors, supporting cognitive neuroscience research.
- Programmed a GUI for 25 participants in 1-hour sessions, enabling machine learning-based analysis of visuo-haptic sensory input.
- Troubleshot hardware overheating issues and independently conducted full experimental runs.

Bartender & Head Waiter - Caffè Trieste Ovada — Ovada, Italy — *06/2019–09/2022*

- Provided customer service, bartending, and cashier support in a high-traffic café.
- Assisted in catering preparation for weddings and large events, including venue setup, food service, and beverage preparation.
- Supervised and coordinated a team of 10 waiters during events hosting over 100 guests.

Education

RWTH Aachen University — *04/2024 – Present*
M.Sc. in Electrical Engineering, Information Technology and Computer Science

- *Major*: Biomedical Systems Engineering
- *Relevant Subjects*: AI, Embedded Systems, Image Processing, Data Analytics

University of Genoa — *09/2023 – 04/2024*
M.Sc. in Neuroengineering and Neurotechnologies – [1 semester]

- *Relevant Subjects*: Biomedical Data Analysis, Signal Processing, Brain-Computer Interfaces, Robotics

University of Genoa — *09/2023*
B.Sc. in Biomedical Engineering

- *Major*: Computer Science and Electronics Engineering
- *Relevant Subjects*: Electrical Communications, Circuit Theory, Object Oriented Programming, Signal Processing, Chemistry, Material Science

Projects

- **Probe Detection**: Object detection pipeline for drone probes using YOLOv8; configuration optimised via YAML.
- **SystemVerilog Memristor Crossbar**: Memristive crossbar array and a spiking AdLIF neuron model in SystemVerilog for neuromorphic applications.
- **Speech-to-Text Transcription GUI**: PyQt5 GUI integrating ML models for audio transcription, grammar correction, and automatic dataset generation.
- **Embedded-SNN**: Lightweight spiking neural network engine designed for EEG classification on embedded devices (Cortex-M4); training performed in Python using Brian2.
- **Multifunctional Website**: Interactive website with features like online chat, media gallery, game room, and letterbox; modular frontend-backend structure.
- **Pathology Classification**: Benchmark of ML classifiers on brain pathology datasets to improve diagnostic accuracy.

More projects and source code on my GitHub

Volunteering

Co-Founder, Young Neuromorphs:

- Founded a student-led community focused on neuromorphic computing.
  Ongoing initiatives include organising an FPGA hackathon in collaboration with imec, curating educational resources for the website, and creating a network for research and internship opportunities.

IT Team, EESTech Aachen:

- Providing website maintenance and technical support.
  Currently coordinating a Community Hackathon sponsored by Infineon.

Skills

- **Core:** Machine Learning, Signal Processing, Data Analysis, Object-Oriented Programming, Embedded Systems, Circuit Design, Electronics
- **Programming:** Python, MATLAB/Simulink, C++, SystemVerilog; basic proficiency in JavaScript, HTML, CSS, React.js
- **Markup:** JSON, YAML, Markdown
- **AI/ML Libraries:** PyTorch, TensorFlow, Scikit-learn, Pandas
- **EDA Tools:** LTSpice, Cadence Virtuoso
- **Dev Tools:** Git, Linux, Jupyter, VSCode, PyCharm; currently studying GCC/LLVM
- **Soft Skills:** Effective communication, teamwork, team leadership, flexibility, project coordination

Certificates

- Coursera – Stanford, Machine Learning – 2023
- IELTS Academic – 2023
- g.tec medical engineering GmbH – BCI and Neurotechnology Spring School – 2023, 2024

Honors and Awards

- **Regional Scholarship**, ALISEO Liguria – 2022
- **Merit Prize for GPA**, University of Genoa – 2021
- **Merit Prize for GPA**, University of Genoa – 2020

Languages

- Italian – C2 (Native)
- English – C1 (Fluent)
- German – A2 (Basic)
- French – A2 (Basic)

Interests

Philosophy, geopolitics, chess, swimming, hiking, vinyls, cinephile (old films preferred) and a music taste oscillating between Acid Techno and Classical Jazz.