



EDUCATION AND TRAINING

[2025]

Master's Degree in Bioengineering - Sensors and Biomedical Instrumentation Track

Università degli Studi di Pavia

| **Final grade:** 107/110

Projects:

- Development of an Electrocardiogram (ECG) Device: design, simulation, and fabrication of an ECG acquisition circuit. Acquisition and processing of biosignal using MATLAB to calculate heart rate.
- Training of a Deep Neural Network for Early Sepsis Prediction on MATLAB: use of ICU patient time-series data to train an LSTM-based neural network for early detection of sepsis.
- Development of a Machine Learning Model for Prediction of Early Readmission in Diabetic Patients: preprocessing of hospital datasets in MATLAB and development of predictive models in Orange Data Mining.

Relevant Coursework:

- Biomedical Instrumentation
- Biomachines
- Microsensors, Integrated Microsystems and MEMS
- Virtual Modeling and Additive Manufacturing

[2024]

Master's Thesis - Erasmus+ Traineeship Scholarship

École Polytechnique Fédérale de Lausanne

City: Neuchâtel | **Country:** Switzerland |

Thesis: *Evaluation of Phase Modulation Architectures for Single-Channel Wireless Information and Power Transfer in Cochlear Implants*

Main tasks:

- Literature review: evaluation of modulation schemes for wireless data transfer in neural prostheses
- Implementation and simulation of two modulator architectures using LTSpice and MATLAB
- Analysis of performance of proposed modulator architectures and comparison for data rate and power transfer efficiency

Skills:

Literature review, circuit simulations, signal processing, presentation of scientific results

[2019] **Bachelor's Degree in Biomedical Engineering**

Università degli Studi di Cagliari

| **Final grade:** 109/110

Thesis: *Development of Microfluidics for an Integrated Biosensor: Control and Automation Module*

Contribution to the design and testing of a prototype microfluidic system for a lab-on-a-chip biosensor.

Tasks:

- Design of microfluidic channel molds using SketchUp and fabrication by 3D printing
- Fabrication of PDMS channels using the printed molds
- Microcontroller programming for automation of micropump control
- Testing of the system

Laboratories and Seminars Attended:

- Electronic Design Laboratory
- Matlab and Simulink for Engineering Laboratory
- Seminar on Organic Semiconductor Sensors for Biomedical Applications

[2017] **Study Abroad - Erasmus+ Scholarship**

Politechnika Łódzka

City: Łódź | **Country:** Poland |

Relevant Coursework:

- Sensors (theory and laboratory)
- Robotics (theory and laboratory)
- Signal processing (theory and group project)
- Computer Aided Design

SKILLS

MATLAB | LTSpice | Abaqus (FEA, CFD) | PTC Creo (CAD) | Microcontroller programming | C
