Leonardo Bove

Graduate Student in
Electronic Engineering

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EDUCATION

M.Sc. in Electronic Engineering — Pisa, Italy
University of Pisa — Sep. 2023 – Oct. 2025

- Specialization: Embedded Systems & Mechatronics
- Thesis title: *Superconducting qubit readout and control system based on FPGA and development of a pulse sequencer*
- Attended Courses:
  - RF Circuit Design
  - Microelectronic Fabrication Technologies
  - Solid State Physics
  - Digital System Design
  - Embedded Systems
  - Sensor And Microsystem Design
  - Microelectronic System Design
- Degree grade: 110/110 with Honors
- Overall GPA: 4.0/4.0

B.Sc. in Electronic Engineering — Pisa, Italy
University of Pisa — Sep. 2020 – Jul. 2023

- Thesis title: *Dispersive Readout of the Transmon Qubit*
- Degree grade: 110/110 with Honors
- Overall GPA: 4.0/4.0

RESEARCH EXPERIENCE

Quantum Characterization Graduate Researcher — Pisa, Italy
Department of Information Engineering, University of Pisa — Sep. 2025 – Present

- Characterization of multiple qubits using frequency multiplexing techniques.
- Software and hardware management of the dilution refrigerator of the laboratory.
- Microwave path engineering: sizing and selection of the components of the system; characterization of the system through RF instrumentation (VNA, spectrum analyzer).
- FPGA development for control and readout purposes.
- Setup of infrastructure for remote qubit characterization (*JupyterLab server*).

Master Thesis Project — Batavia, IL, USA
SQMS, Fermilab — May 2025 – Jul. 2025

- Development of *QPCB*, a custom pulse frequency up/down-conversion board. Microwave EM circuit analysis (*ADS Keysight*)
- Development of Qubase, a high-level qubit pulse sequencer in Python, that relies on the open-source *QICK* board, a Xilinx FPGA based real-time RF signal generator and readout system, developed at SQMS, Fermilab.
- Application of Qubase in 2D and 3D superconducting qubit characterization and other advanced research purposes.
- Automation of the calibration process.

INDUSTRY EXPERIENCE

Chief Technology Officer — Pisa, Italy
E-Team Squadra Corse, FSAE team — Sep. 2023 – Sep. 2024

- Lead the development of the EV (Electric Vehicle) car of the University of Pisa (*Electronics & Software Divisions*).
- Final approval of projects.

- Main high voltage battery manager.
- Manager of the GitLab server of the Team.
- CI automation manager; PR and issues reviewer.
- Team building and teamwork promoter.
- Management of people's activities and trips.

Embedded Software Developer Navacchio (PI), Italy
Sintonica s.r.l. May 2023 – Sep. 2023

- Develop the driver firmware for TFT LCD displays for a custom embedded OS on Infineon PSoC ARM microcontroller
- Layout of the new release of the company's development kit PCB, based on Cypress and nRF PSoC.

PCB Designer and Embedded System Developer Pisa, Italy
E-Team Squadra Corse, FSAE team Sep. 2022 – Sep. 2023

- Lead the development of the embedded software of the mounted PCB boards
- Develop part of the Vehicle Control Unit software, based on the FreeRTOS real-time OS
- Develop a bootloader via CAN bus, ARM and AVR compatible
- Unit and integration testing of firmware

SKILLS

Development Tools & OS
Git, Linux, Windows

Programming Languages
C/C++, Python, Verilog, VHDL, MATLAB, Bash, Assembly

Quantum Computing
Superconducting qubit characterization, Qiskit, QuTiP

FPGA Design
Vivado, Quartus, ModelSim

Embedded Systems
STM32CubeIDE, PSoC Creator, Simulink Model-Based Design

Analog Design
SPICE, ADS, KiCad, Altium

MEMS Design & Simulation
COMSOL Multiphysics

Microcontrollers Architectures
AVR, ARM

Lab & Fabrication
VNA, soldering, prototyping, Autodesk Fusion 360, 3D printing

LANGUAGES

Italian	Native speaker
English	C2 level (Cambridge Assessment English, overall score of 200 equivalent to IELTS 8.5, 2020)
German	B2 level (CLI University of Pisa, 2022)
French	A2 level

Grad Course Projects

SpaceFibre PLL Pisa, Italy
University of Pisa, *Wireless Integrated Circuits*, Prof. Daniele Rossi Sep. 2022 – Sep. 2023

- Model and ADS simulation of a SpaceFibre compatible 6.25GHz PLL, implemented using the SG25H4 0.25 μm SiGe BiCMOS technology from GlobalFoundries.
- Study of the system stability and performance.

Handwritten Digit Recognition Pisa, Italy
University of Pisa, *Digital System Design*, Prof. Roberto Saletti Jan. 2025 – Feb. 2025

- An handwritten digit recognition system based on a neural network implemented on Altera DE10-Lite board (Altera MAX10 10M50DAF484C7G FPGA).
- Digital twin implemented in Python for training and quantization.
- Custom Verilog driver for touchscreen and visualization on Terasic LT24 screen.

Dual Axis Accelerometer Pisa, Italy
University of Pisa, *Sensor and Microsystem Design*, Prof. Massimo Piotto Dec. 2024 – Jan. 2025

- COMSOL simulation of a dual-axis MEMS accelerometer with T-shape beams.
- Study of the device performance and application range, compared to the lumped elements schematic model.

Rubik's Cube Automatic Solver Pisa, Italy
University of Pisa, *Mechatronic Systems Design*, Prof. Roberto Di Rienzo Nov. 2024 – Dec. 2024

- A servo motor actuated Rubik cube solver robot, controlled by S32K144EVB
- Developed using Simulink Model-Based Design.
- Digital twin of the overall system.

OTHER SKILLS

Driving license	B license
Music	Violin