

Luca Dalmasso

EMBEDDED SYSTEMS ENGINEER ·

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Personal Profile

Highly motivated student with some work experiences gained during my studies. I am very much passionate and interested in Computer Architecture and ASIC design.

Primarily interested in digital IC design but also open to learn more on Embedded Linux and Firmware design.

Education

Politecnico di Torino

MSc in Computer Engineering, Embedded Systems

Turin, IT

2020 - 2022

- Final grade: 110/110
- Thesis: MC2101: A RISC-V-based Microcontroller for Security Assessment and Training.
- Supervisors Prinetto Paolo., Roascio Gianluca.

Politecnico di Torino

BSc in Computer Engineering

Turin, IT

2017 - 2020

Work Experience

SISTEMATICA S.P.A

Programmer Analyst

Città di Castello (PG), IT

April 2020 - July 2020

- Development of a Raspberry-Pi tool for the communication, through CAN bus, with the Vehicle Control Unit of the FCA e-Ducato 2020.
- Hardware In the Loop testing.
- **Technical Skills:** Python, Linux, Linux tools, Scripting, Git.
- **Soft Skills:** Teamwork and Communication

I.S.C.S srls

Programmer Trainee

Turin, IT

June 2019 - Sept 2019

- Development, testing and release of a iOS and Android application for wearable devices.
- **Technical Skills:** C#, Bluetooth Low Energy, Xamarin framework, Git
- **Soft Skills:** Teamwork, Scrum Methodology.

University Projects

MC2101: A RISC-V-based Microcontroller for Security Assessment and Training

Politecnico di Torino, IT

MSc Thesis

2022

- The purpose of my thesis was to design the entire architecture of an embedded system, compatible with the RISC-V ISA, that can be synthesized on FPGA and used on a development board.
- RTL design in VHDL of the bus infrastructure, memory and peripherals
- Software design of system libraries and bootloaders
- Test and evaluation of the microcontroller on FPGA
- Knowledge of the RISC-V Instruction Set Architecture from the specifications to the RTL implementation
- **Technical Skills:** LaTeX, Git, Microcontrollers architecture, RISC-V, Quartus Prime, FPGA, C, ASM, VHDL
- **Soft Skills:** report writing, critical thinking, presentation skills.

Design of a RISC processor

Politecnico di Torino, IT

Microelectronic system course

2021

- RTL design, synthesis and physical design of a 32-bit RISC core using VHDL and EDA tools (ModelSim, Synopsys and Innovus)
- Load-Store architecture with 4 pipeline stages.
- Integer subset of the DLX ISA.
- Customized ALU implemented using optimized arithmetic blocks of the Pentium 4 and UltraSPARC T2 processors.
- Basic Hazard Detection features.
- Software automation toolchain for testing the design at RTL-level with custom assembly programs.
- Synthesis with Clock Gating.
- **Technical Skills:** ASIC design, EDA tools.
- **Soft Skills:** Time Management, Teamwork, Presentation skills, Report writing.

Design of a DFT circuit for the RI5CY processor

Politecnico di Torino, IT

Testing and Fault Tolerance course

2022

- Design of a synthesizable Logic build-in self-test (LBIST) for a RISC-V processor for power-on testing.
- Adoption of Test-per-Scan methodology optimized for area, timing and complexity reduction for the RI5CY core.
- Evaluation of the LBIST test impact in terms of area and time required to run a complete test.
- Deep understanding of MISR, PRPG, ATPG, Test Points, Scan Chains and other DFT components and tools.
- **Technical Skills:** testing of big sequential circuits, ATPG, Test-per-Scan technique, TestMAX tool, SpyGlass tool, Design For Testability.
- **Soft Skills:** Presentation skills, Teamwork.

Acceleration of a CNN in CUDA for the GPU Nvidia Tegra-X1

Politecnico di Torino, IT

GPU Programming course

2022

- Critical evaluation of the CNN's forward propagation accelerated performances with respect to the CPU version.
- Methodological approach for CUDA-C programming.
- knowledge of Convolutional Neural Networks.
- Usage of NVIDIA's tools for compiling and profiling GPU programs.
- GPU Nvidia Maxwell architecture
- **Technical Skills:** Markdown, Git, CUDA, Nvprof, Nvidia GPUs, LaTeX.
- **Soft Skills:** Report writing, Critical Thinking, Presentation skills.

Skills

Programming Python, C, Java, Assembly (x86, ARM, RISC-V), Bash, Tcl, CUDA.

Hardware VHDL, Verilog, FPGA, Computer Architecture, Microcontrollers, GPU

Miscellaneous Linux, Shell (Bash/Zsh/Tclsh), LaTeX, Git, GNU Toolchain, Yocto Project, EDA Tools (Synopsys, Cadence, Intel, Xilinx, Siemens).

Soft Skills Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation.

Languages

English Professional proficiency

Italian Native proficiency

Open to relocate.