Laura Zunarelli - Curriculum Vitae

Education

November 2020 – current position

Name of institute: Alma Mater Studiorum- University of Bologna
Qualification: Doctor of Phylosophy
Branch: Engineering And Information Technology For Structural And Environmental Monitoring And Risk Management
Title of the project: Models development of new cells protection for electrostatic discharges integrated in Smart Power technology
Language of Instruction: English

2017- March 2020

Name of institute: Alma Mater Studiorum- University of Bologna
Qualification: Master Degree
Branch: Electronic Technologies for Big Data and IoT
Title of Thesis: TCAD Analysis of High-Voltage ESD protection cells in Smart Power technology under very fast transients(in collaboration with Texas Instruments Inc.)
Language of Instruction: English
Level on National Classification: 110/110 cum laude

January 2019-June 2019
Abroad Experience: Erasmus+ study program
Name of institute: ESIEE Paris est
 Location: Paris, France

March 2019
Abroad Experience: Winter school "Chip Fab of the future: be part of it!"
Name of the company: Infineon Technologies
 Location: Villach, Austria

October 2019-December 2019
Abroad Experience: Internship abroad
Name of the company: Texas Instruments Inc.
 Location: Dallas (TX), USA

2013-2017

Name of institute: Alma Mater Studiorum- University of Bologna
Acquired Qualification: Bachelor degree
Branch: Electronic and telecommunication engineering
Language of Instruction: Italian
Title of Thesis: Analysis and characterization of a wake up radio device
Level on National Classification: 97/110

2007-2013

Name of institute: Liceo Classico Marco Minghetti (High school), Bologna, Italy
Acquired Qualification: Diploma
Level on National Classification: 83/100

Personal Competencies

Native Language Italian

Other Languages English - Ielts certified C1 level

Reading skill	Excellent
Writing skill	Excellent
Oral expression skill	Excellent

Other Languages French

Reading skill	Good
Writing skill	Good
Oral expression skill	ok

Relational Skills:

 Group working ability, matured in multiple occasion when the collaboration was essential: since 2008, I have organized several events - especially for children - as a manager in a scout group. In order to prepare these events, group meetings were organized in which it was essential to facilitate communication put together everyone's resources and make decisions in a democratic way.

Teamwork and organization:

During my six- months Erasmus experience in France, I had the possibility to successfully develop projects and prepare the final reports in the field of MEMS and computer architecture with student colleagues from all over the world with different backgrounds and culture.

In addition. During my internship in Dallas (TX), I had the possibility to work and collaborate with several organized expert groups in the field of semiconductor manufacturing, participating to weekly company meetings where sometimes I played an active role.

My ability to work in a team matured on multiple occasions, where cooperation among different figures was essential: organization of experiences for young people in the field of volunteering, in collaboration with groups, being a speaker and mentor for the little ones. I have participated to training courses to become a scout leader (CFT, CFM, CFA), a role that I am still staying on.

Technical Skills Good mastery of Microsoft Office Instruments

Good mastery of programming languages and software used : Assembly, VHDL, Verilog, System Verilog, C, Matlab, Labview, Quartus, LTspice, Sentaurus System Workbench, STM32CubeIDE, Eclipse, QGis

Good knowledge of operating systems : windows7/8/10 and Linux

Good knowledge of ARM architectures and embedded systems

Projects and experience acquired

Bachelor Thesis Project: Analysis and characterization of a Wake-Up Radio
The final project consisted on the analysis of a ST Microelectronics Wake-Up Radio system which was not yet characterized for long distances purposes. The system, now, can be controlled by a mobile App with which it is possible to send the Wake-Up signal. The characterization I have carried out has also evidenced the drawbacks of the system for long distances and I have also proposed solutions for triggering code and Interrupt code of the receiver to increase previous performances.

Lab of Digital Electronics
During this course hardware description language was used to implement combinatorial and sequential logic, and finite state machines. In the final project a new peripheral was added to an open source single core RISC-V system on chip (PULPino), to process a PWM signal at the input. Finally, several test bench simulations through ModelSim- Altera were performed in order to evaluate the correct functionality.

Analog circuits, sensors readout and conversion M
As a final project for this course the design of a two-stage Opamp and a Butterworth filter with LTSpice was carried out.

Signal and system (Paris ESIEE)
Project implemented on Matlab in order to model a vehicle speed characterizing the solutions for its first and second order differential equation using Simulink tool.

Computer architecture (Paris ESIEE)
Experiment of optimization techniques of Sobel Filter implementation in the context of embedded systems. The project consisted on the implementation of a Sobel filter for image processing purposes with C++ language code. Primarily to this project several other investigations have been made on the system; more specifically Assembly language used to implement such filter, evaluation of cache memory performances and evaluation of some code optimization technique of RISC processors.

Networking (Paris ESIEE)
Protocol analysis of TCP-IP connection over the local server using Wireshark system tool, investigate the type of connection, the messages that had to be sent in order to understand what every layer of the protocol is d at each step of the connection.

Topical MEMS design (Paris ESIEE)
In this project two different cases of the mechanical structure of a vibrating gyroscope have been analyzed using Ansys: a dual mass system working as a tuning fork, a single mass with frequency matching by electrothermal means. The structure has been characterized first in tuning fork gyro with out-of-phase motion for both Drive and Sense vibration modes and, afterwards, tuning electrothermally the structure with according resonance frequencies.

Master thesis Project: TCAD Analysis of High-Voltage ESD protection cells in Smart Power technology under very fast transients (Dallas, TX)
The aim of the project was to characterize with a TCAD tool an ESD protection by simulating its DC behavior and, afterwards, its responses to Transmission Line Pulses (TLP) stimula. The purpose of these simulations was to investigate the thermal failure of the device in order to further improve its performances as and Electrostatic discharge protection for an High power IC applications.

24th March, 2021   Signature: