Maria Teresa Blanco Abad

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Education

Sept. 2018 – Dec. 2020 **MSc** in Embedded Systems — **Delft University of Technology (TU Delft), NL**
Track: Software and Networking. MSc thesis title: "Designing and implementing SFMAC: A MAC protocol for LoRa networks for efficient use of unlicensed bands" Grade: 8.5/10

Sept. 2019 – Dec. 2019 **Exchange student** — **Chalmers University, Sweden**
Exchange as part of the *UNITECH* program. Attended Management and Telecommunication Engineering courses

Sept. 2016 – May 2017 **Exchange student** — **University of Rhode Island (URI), USA**
Attended Electrical and Mechanical courses. GPA 3.86/4.0, on Dean's list

Sept. 2013 – May 2017 **BSc** in Industrial Engineering Technology — **University of Zaragoza, Spain**
Degree equivalent to Mechanical/Electrical Engineering with a concentration in Electronics

Experience

Oct. 2018 - Sept. 2019 **Part-Time Electrical engineer** — **Silverwing, Delft, NL**
- Programmed in C++ the CAN communication interface between the flight computer and the flying vehicle propellers. Responsible for Software during the performance test of the propellers
- Selected electrical components for the actuation of the control surfaces of the vehicle. Contacted suppliers and established a partnership to sponsor the actuators for the vehicle

June 2019 - Aug. 2019 **Embedded Software intern** — **TWTG, Rotterdam, NL**
- Improved and tested an application in C++ to perform firmware updates over the air in LoRa devices
- Configured a Raspberry Pi as a DNS and network server for the LoRa gateway. Used mosquitto (an MQTT protocol using a publish/subscribe model) to communicate between the web application and the network server to schedule the firmware update

May 2018 – Aug. 2018 **Mechatronics intern** — **VDL Enabling Technologies Group (ETG), Eindhoven, NL**
- Design of Simulink blocks and Matlab scripts to add more functionality to the control architecture of a wafer handler. Modeled an actuator, measurement system, encoder, and a set-point-generator (SPG)
- Improved the profiling and measurement methodology of the communication delay between the sensor interface and the robot controller by adding PLC scripts in the Software environment of the wafer handler: TwinCAT

Sept. 2017 – Mar. 2018 **Software development intern** — **Amadeus IT Group, Boston, USA**
- Helped in the development of the backend of a web application for booking of business trips in Java 8 and XML
- Followed SCRUM methodology to track the tasks completed and to ensure continuous deployment of Software

May 2017 – Sept. 2017 **Software development intern** — **Amadeus IT Group, Boston, USA**
- Developed a real-time dashboard to monitor metrics and Key Performance Indicators (KPI) resulting in an improvement of the productivity and visibility of the work produced by 20 people in the Front Office Reservation department
- Designed the Software architecture: used Python and Amadeus internal APIs for automating the data collection and Ruby on Rails for rendering the dashboard

Software and Electrical Engineering projects

Jan. 2020 - Dec. 2020 **MSc thesis** : "Designing and implementing SFMAC: A MAC protocol for LoRa networks for efficient use of unlicensed bands" — **TU Delft**
- Simulated in ns3 (C++) LoRa networks to increase the number of devices that can be served. Tested the MAC protocol implementation in a LoRa network with traffic from a COVID-19 social distancing monitoring application leading to double packet reception ratio, PRR, compared to current LoRa deployments
- Programmed in Python scripts for optimizations (Gurobi solver) and data analysis. Used Matplotlib to create graphs and scikit-learn and statsmodels to perform statistical and time series analysis of the traffic generated in the LoRa network
- Scheduled simulation jobs in the university cluster by using Bash Shell Scripts to automate the process

Mar. 2019 - Jun. 2019 **Quadcopter control** — **TU Delft**
- Programmed in C the main functions for control of a quadcopter: communication protocol for RS232, pitch yaw and roll control, filtering of raw data from sensors (Kalman filtering)

Mar. 2019 - Jun. 2019 **SmartPhone Sensing** **TU Delft**

- Developed an Android App for indoor localization. Used Bayesian inference to locate the user by determining the closest indoor WiFi router. Deeply tested and optimized the output from different phone sensors: gyroscope, magnetometer, accelerometer

Sept. 2018 - Dec. 2018 **AdHoc networks** **TU Delft**

- Deployed an AdHoc network to control a robot car. Applied networking concepts and used C skills to program the Arduino controlling the robot

Sept. 2016 - May 2017 **Electrical Capstone Design Project**: ”SARNET, Search and Rescue Network” **URI**

- Integrated commercial off-the-shelf (COTS) hardware to create a networked platform capable of performing image processing (visual and thermal), parsing GPS metadata, or communicating with the base station
- Used OpenCV to detect contours in thermal images and Python, Bash to run scripts on a Raspberry Pi

Honors

Jan. 2016 **“Beca de Norteamerica Asia y Oceania”** **University of Zaragoza**
Scholarship to study one year abroad in the USA. The scholarship acceptance rate was 20%

May 2013 **“Matrícula de Honor en Bachillerato”** **High School Sansueña, Zaragoza**
Graduated with honors in High School. Scholarship for the first year of Bachelor’s degree. The scholarship acceptance rate was 6.25%

Activities

Sept. 2019 - Aug. 2020 **Student participant** **UNITECH International Programme**

- **Aug. 2019**. Attended a one-week-duration joint module in ETH Zurich consisting of activities guided by corporate partner coaches focused on core-relational, leadership and management skills
- **Jan. 2020**. Presented a preliminary study for developing a new product for the R&D department of Geberit (participating company). During a one-week module, a case study was developed by our team and presented to the company representative (deliverables: research of the sanitary ware market, composition of a business canvas, proposal of the technical features and development of a high-level marketing strategy)

Sept. 2014 - June 2016 **Representative of Industrial Engineering students** **University of Zaragoza**

- Acted as the main link between the Bachelor’s coordinator and students. The tasks consisted of the scheduling of exams, solving inconsistencies in the content of courses, organizing the Bachelor’s graduation event
- **March 2016**. Organized a symposium during the Engineering Cultural week

Software and Hardware Skills

Programming Language	Level
Python	Advanced
C	Advanced
C++	Advanced
Java - Android	Intermediate
Bash scripting (UNIX/Linux)	Basic

Hardware	Experience
Raspberry Pi	Advanced
ARM MCUs	Advanced
Arduino	Advanced
Communication modules: LoRa radios, CAN modules	Advanced
Software Defined Radio (USRP)	Intermediate
OcPoc (Real-Time Operating System (RTOS) device))	Basic

Engineering Software	Level
Matlab	Advanced
GNURadio	Advanced
Git, GitHub	Advanced
Simulink	Intermediate
OrCAD	Basic
PSpice	Basic

Languages

Spanish, native language
English, full professional proficiency, Level C1, TOEFL IBT test (Score: 114, Jan. 2018)
French, professional working proficiency, Level B2, DELF test
Dutch, elementary, level A2