

# Undergraduate Internship Program

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Spring 2015

This document provides a summary of the activities accomplished during my stay at Carnegie Mellon University, from February to May. I worked at the Electrical and Computer Engineering Department, hosted by Prof. Shawn Blanton.

The focus of my work was in the algorithm proposed by Ph.D student Xuanle Ren aimed to improve on chip detection of circuit failure. In a first stage I devised an architecture and implemented the algorithm in an hardware description language. In a second stage I synthesized my design to a FPGA and evaluated its performance. Although I had familiarity with the design of digital circuits, the bigger scale of this task provided me invaluable experience. The goal of achieving optimal performance with minimal hardware cost, made me learn more about parallel hardware architectures.

In addition to my day to day work, I had the opportunity of participate on Prof. Blanton's group meetings with his Ph.D students. On those meetings each Ph.D student presented a conference paper related to his investigation. The papers on hardware architectures of machine learning algorithms were specially interesting for me. Eventually I also led a meeting to present the results of my hardware implementation.

The CMU Campus has endless activities for students. I left specially impressed with size and quality of the job fair held in the first week I was at Pittsburgh. I also enjoyed the presentations given by the faculty candidates to the professor position in the ECE Department.

With this Undergraduate Internship I got a better sense of some of the challenges and rewards surrounding the research world. The operating differences between American and Portuguese Universities is palpable. From this clash of cultures I expect to learn valuable lessons for my future career. This program is without question a great experience I recommend to everyone.

I want to thank my host at the Carnegie Mellon University, Prof. Shawn Blanton, my sponsor from the Faculty of Engineering of the University of Porto, Prof. José Machado da Silva, the Carnegie Mellon Portugal staff and the Foundation for Science and Technology for all their support.