

Information and Communication Technologies Institute
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A N I N T E R N A T I O N A L P A R T N E R S H I P

Undergraduate Internship Program Report
Duarte Dornellas | Summer 2017

Throughout this report I will describe my experience as a participant of the CMU-Portugal Undergraduate Internship Program, between July and September 2017. I worked under the supervision of Professor Alonzo Kelly, Michael George and Tekin Meriçli, at the National Robotics Engineering Center, an off-campus branch of The Robotics Institute. My supervisor in Portugal was Professor Alexandre Bernardino, who is also supervising my MSc thesis.

Being close to finishing my degree, one of the main reasons I decided to apply to the CMU-Portugal UIP was my interest in the possibility of pursuing a PhD. I saw in this program a possibility to experience first-hand what it would be like to work in an academic context in one of the top universities in the field of robotics - an expectation that was undoubtedly fulfilled.

The scope of my work at NREC was to explore monocular visual/visual-inertial odometry solutions, a topic which overlaps with that of my MSc thesis. Having started by reviewing the classical approaches as well as the historical developments towards the state of the art, I later moved on to working with a sensor setup, consisting of a single camera and an inertial measurement unit. I also worked with a motion capture system, which was used to provide ground truth to allow for the assessment of the quality of the results.

Working at NREC allowed me to take advantage of its vast resources. Having fabricated the sensor housing to be used with the motion capture system, I was able to have a hands-on experience of the NREC shop, which was definitely an interesting task to undertake.

In parallel with the work I had been doing, I had the opportunity to attend talks on topics ranging from urban traffic optimization to automatic software repair, as well as success stories from companies who were applying automation techniques to waste sorting or construction site inspection. Since classes started during my time in Pittsburgh, I also had the opportunity to audit some very interesting courses on campus.

Living in Pittsburgh made it possible to be immersed in an environment which was incredibly stimulating, and in which a significant number of people are working towards similar goals. This, I found to be one of the most interesting aspects of life in Pittsburgh/CMU - how driven and focused an environment it sustains, and how exciting it is to be a part of it.

I would like to acknowledge Professor Alexandre, Alonzo, Michael and Tekin for all their support and ultimately, for making my participation in this program possible. I would also like to thank CMU-Portugal and Fundação para a Ciência e Tecnologia for their help and support.