

Information and Communication Technologies Institute Carnegie Mellon | PORTUGAL

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

Final Report - Undergraduate Internship Program

Fall 2017

The CMU Portugal undergraduate internship program (UIP) enabled me to conduct research at the Integrated Soft Materials Laboratory (SML) under supervision of Prof. Carmel Majidi, from October 14 to December 31. This stay was sponsored by Prof. Mahmoud Tavakoli at Instituto de Sistemas e Robótica (ISR-Coimbra) where I concluded my master degree defending a thesis on interfaces for stretchable electronics.

Upon my arrival the goal was set to prepare a new article on inkjet printable thin-film electronics made in collaboration between ISR and SML. I closely worked together in a team with Master student Yunsik Ohm and Pos-doc Dr. Mohammad Malakooti. My contribution focused on the development and implementation of fabrication methods that integrate solid-state devices (chips) in such thin-films and interfaces with external solid-state electronics.

The work strongly relied on soft materials like elastomeric silicones, and stretchable interconnects like conductive nano-composites or liquid metals; and techniques such as room-temperature sintering and HCl vapor reduction, among others.

My stay has been giving me a different perspective of the work culture in a leading scientific environment, from the day-to-day lab work to conferences and regular meetings. My learning from the past three months was not limited to a professional level, but extends to a richer cultural experience in Pittsburgh. I also had the opportunity to travel to Toronto by train and be in New York City as a guest for Thanksgiving.

A special acknowledgement to the CMU Portugal program for creating these unique opportunities, to the staff both in Portugal and in Pittsburgh that helped me through the process, to Prof. Carmel Majidi for his support, to all the SML lab members for receiving me so well and to Prof. Mahmoud Tavakoli for presenting to me this project.

Finally, there was the opportunity to extend my stay at the SML off the UIP's scope.

Daniel Green Marques

December 31, 2017