

Faculty Exchange Program Report

Participant: Inês Dutra, Prof. Auxiliar, DCC/FC, Universidade do Porto

Host: Dr. Jeremy Weiss, Heinz College

Period: August 21st to December 15th, 2017

According to the work plan, our main aim with this visit was to join different expertises in order to incorporate concepts of point processes (main area of my host Dr. Jeremy Weiss) in Inductive Logic Programming (ILP, one of my research areas). The combination of these two different concepts were to be applied to medical data, since in this area there is a lack of understanding of data in some domains and a lack of interpretable models. Besides having obtained his Ph.D. in Computer Science, Dr. Weiss is also a medical doctor, which facilitated interpretation of results and understanding the medical problems. We managed to fulfill our goal by devising a model that incorporates ideas of point processes and ILP. At the time of writing this report, we have been collecting results. The ideas and results are going to be submitted to a venue in ILP and another venue in Health informatics by the end of this year and beginning of 2018.

The data we have been working with is the MIMIC-III database (**M**edical **I**nformation **M**art for **I**ntensive **C**are **I**II), created in MIT, which includes over forty thousand patients who stayed in critical care units of the Beth Israel Deaconess Medical Center between 2001 and 2012. This is a comprehensive database containing very rich information about patients that stayed in Intensive Care Units, specially high resolution temporal data. Before using this data I had to complete 17 training modules to obtain a CITI (Collaborative Institutional Training Initiative) certificate to be eligible to use data involving Human Subjects. As I am approved, I will be able to continue research with this data back in Portugal and advance collaboration with Dr. Weiss.

Besides doing research I gave two informal seminars in the Department of Management and Information Systems at Heinz College, attended most of the seminars by colleagues in the department and by invited speakers, and learned new methods from other areas of research. I delved into methods for survival and risk analysis, causality, and temporal data analysis, and had the chance to dig into technical details, such as learning how to use some of the R packages that handle these kinds of data analysis.

I did not have a chance to interact much with students because Dr. Weiss was not teaching this semester, but I attended some classes in the Department of Computer Science (mainly by Dr. William Cohen, which works in areas similar to ours). I also attended Faculty talks in the beginning of the semester. These talks are particularly special because each faculty member gives an overview about his/her research topics and open research problems.

I also had the opportunity to attend a couple of talks at the University of Pittsburgh Health Informatics Department.

During my stay in CMU, there were some events organized by the CMUPortugal directors, which I also attended, including the InRES kick-off meeting where I met several colleagues that are taking very interesting innovative projects to the market, through their startup companies.

I also had the chance to interact with some colleagues and students in the same CMUPortugal program.

Acknowledgements

All in all, it was a very enriching experience, which I would repeat if I could. I was warmly welcomed by everyone in the department, administrative, technical and faculty staff. Everyone was very helpful to settle my machine and accounts, and showing my way through. I had nice conversations with Jeremy during our weekly meetings. People from the Office of International Education are awesome! As well as Heinz staff people. All of them wanted to make me feel comfortable. I appreciated feedback from faculty people during my seminars and some conversations in the corridors. I also would like to express my gratitude to people involved in the CMUPortugal program. Initiatives like that are extremely important, and I just hope the program continues so that others can have the same enriching experience I had.