

Report on Faculty Exchange Program participation

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Introduction

My participation in the Faculty Exchange Program encompassed two main objectives: concerning education and research. The goal in terms of education was to accompany two courses lectured by the School of Computer Science: Graduate Artificial Intelligence (15780), and Exploring Programming with Alice (15101). In terms of research, a long-term collaboration effort was initiated with the Manuela Veloso's group. This report details some of the activities and achievements obtained in each one of these areas.

Graduate Artificial Intelligence

The participation in the course Graduate Artificial Intelligence (15780) was motivated by the fact that I have been lecturing the course Artificial Intelligence and Decision Systems at Instituto Superior Técnico (IST) for the past 6 years. Attending the Graduate Artificial Intelligence allowed to me apprehend many interesting aspects about the teaching of the course contents. In the aftermath, I have proposed a PhD course at IST, covering a similar range of topics, but with more emphasis on robotics. This proposal was accepted and I will taught it during the 2012/2013 academic year.

Exploring Programming with Alice

The motivation for attending the Exploring Programming with Alice (15101) came from the idea of employing similar teaching methods for engineering freshmen at IST. It has been observed a recent trend for a decreasing student pass rate in the first year programming course, currently being taught using the C language. The Alice platform allows basic programming concepts to be conveyed to students by the means of visualization in a 3D virtual reality scenario. A drag'n'drop based language is used, which allows students to learn how to program without knowledge of a traditional language syntax.

In this course, after the basic concepts are introduced, there is a smooth transition to Java. I have observed an extraordinary progress by the students, mostly from Humanities, during the semester.

Research

Concerning research, I have worked closely with Manuela Veloso's group, namely in the Cobot project (NSF). My participation focused on the challenges of effectively deploying mobile service robots to real users. In particular, I worked in two problems: (1) the development of an architecture for users to schedule tasks to the robot and interacting with it during the tasks execution, including task scheduling, web interface/application design, and coordination with the mobile robot, and (2) the execution monitoring of these tasks, in order to both detect faults or other unexpected events, and to cope with them. From this research effort resulted the submission of two conference papers. Moreover, a strong long-term collaboration between ISR and CMU was initiated on these research problems.

Concluding remarks

I found my participation in the program extremely fruitful. From a personal development stance, it was a positively enriching experience, namely in terms of improving my teaching and student supervision practices, as well as research-wise. From an institutional point of view, it allowed to initiate a collaborative line of research, which is currently ongoing beyond the end of the exchange.

It is my strong conviction that, even though the high level quality of most research carried out in Portugal, the academic community would benefit from a more widespread participation in this faculty exchange program.

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