First Lego League - FLL

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Activities Report

Abstract—This semester, the activity I have chosen for the Personal Portfolio III subject was the *First Lego League (FLL)* project, coordinated by Professor Paulo Carreira in cooperation with Professor Sónia Gil. I was enrolled in this activity from November 2014 to January 2015. During this period I was mainly involved in document translation tasks related to the documentation of First Lego League (both for referees, judges and teams/competitors) as well as competition classification charts and judge support and training material.

Index Terms—*First Lego League*, *FLL*, documents, translation, robotics, competition, science, computer science, LaTeX, paper.

Too Many! 5 or 6 are enough!

1 Introduction

In the context of the **Personal Portfolio III** subject, students are required to perform an extra-curricular activity and produce a report of their efforts during the semester. Following the guidelines provided to the students, I decided to apply for a place in the organization of the *First Lego League (FLL)* competition (institutional activity code: *O1415T1D01*), oriented by Professor Paulo Carreira of the computer science department. The tasks advertised by the promoters of this activity were as follows: document translation for participants and referees, preparing formation sessions for judges and referees, promoting the event and gathering sponsors.
The work performed in this institutional activity as well as the activity itself will be described in more detail in the following sections.

2 The Competition

2.1 Description

First Lego League (FLL) is a competition for children ages 9 to 16, which was developed to stimulate their interest in the fields of science and technology as well as providing them with real life skills, which will definitely be useful for them in their future academic or business related endeavours. *FLL* is now a worldwide event but has only reached Portugal last year, by the hands of Professor Paulo Carreira, Professor Sónia Gil and Instituto Superior Técnico (IST).
Mobile Robotics is an emergent theme in the field of engineering and engineering students must be encouraged to learn more about it. [1] There is already some work developed in the field of low cost robot development for education, which is fundamental because the sooner children start interacting with robots and light programming, the better it will be for them in the future. [2]

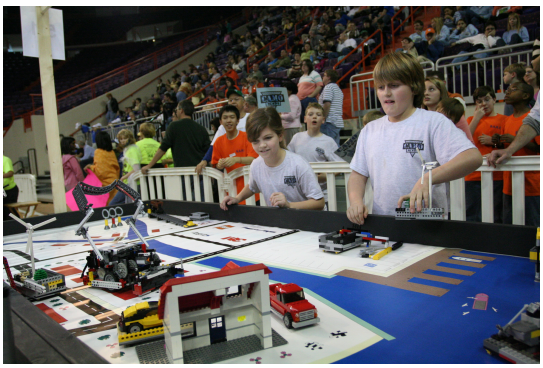

Figure 1. FLL competition venue in Belgium

Figura deve estar referida no Texto!

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(1.0) Excelent	ACTIVITY					DOCUMENT						
(0.8) Very Good	Objectives x2	Options x1	Execution x4	S+C x1	SCORE	Structure x0.25	Ortogr. x0.25	Gramm. x0,.25	Format x0.25	Title x0.5	Filename x0.5	SCORE
(0.6) Good												
(0.4) Fair	2	0.6	3.6	0.7	6.9	0.15	0.25	0.25	0.25	0.4	0.5	1.8
(0.2) Weak												

2.2 Goals and Core Values

The core values of the *FLL* competition are what sets it apart from other similar competitions. The participants are encouraged to enforce them and, by doing so, they learn that friendly competition and mutual learning will be very important throughout their lives and constitute the backbone of teamwork.
The *FLL* wants the teams to explore a real problem that scientists and engineers are dwelling with nowadays, to develop an innovative solution for said problem and share their findings with the participants and the organization.
The teams must build and program an autonomous robot using *LEGO Mindstorms* technology and then compete in a match against each other in a theme appropriate venue.
FLL coaches are not required to have any technical skill, the children are supposed to do all the work, following the competition's core values guidelines.

3 The Activity

3.1 Contextualization

The FLL activity was already being planed in Taguspark before the Portfolio team "joined the boat", so that is where we first gathered in a reunion with Professors Paulo Carreira and Sónia Gil. We were all presented with the goals for that time period which, given its short duration (approximately 2 months) consisted mainly in the translation and preparation of all sorts of documents related to the competition: rule books, presentations, judging charts, generic instruction sheets, referee material, etc.

3.2 Tasks Division

As there were members of the FLL team both from Alameda and Taguspark *campi* we created a shared Excel worksheet which we maintained on an online shared folder (via *Dropbox*), in order to coordinate our efforts and improve the efficiency of our work. Although we were provided with a shared work room in Taguspark, it was not very convenient for the Alameda campus' students and we decided to do most of our work from home and kept contact through the Internet.

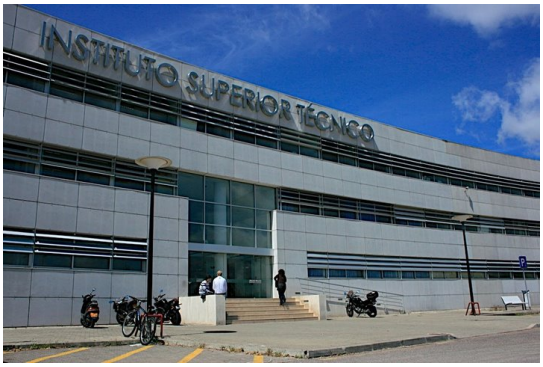

Figure 2. Taguspark, the place where the Portuguese FLL competition is organized.

The tasks were divided in a volunteering basis, which means each member would write on the shared Excel sheet which document(s) or folder of documents he/she would translate next and set the status of that task to *Ongoing* and then, when finished, the task status on the sheet was changed from *Ongoing* to *Concluded*. This way everyone always knew which tasks were available and which documents were already translated or on the verge of being translated. Fortunately everything ran smoothly and there were barely any miscommunication issues.

3.3 Work Accomplished

We knew, from the beginning, there was not enough time to translate all the documentation we were given but in the end of this brief period collaborating with the FLL team at IST, we accomplished to translate dozens of documents from several different areas of the organization of this competition, including awards descriptions and structure, certification, deliberation tools, rubrics, presentation and more. As for myself, my translation efforts were mostly focused on judge tools and materials, certifications and guides on how to handle issues concerning the core values of the competition.
We were told that as the time frame was not as large as hoped, if we wished to do so, we could continue the preparation of said competition in the upcoming semester.

4 Conclusion

I believe everyone that has worked on this project considers this activity to have had a positive outcome. Personally, I already knew about the existence of this competition but I was able to learn more about it and the field in which it is inserted (Robotics), which is a big interest of mine, as an Intelligent Systems' major and Robotic Systems' minor.
Although this subject is over, our work with FLL is probably not over yet and I hope there will be a chance to further develop our cooperation with the FLL organization in the next semester.
To sum up, I believe it was a fulfilling experience for everyone involved.

In this type of document (Technical), the CONCLUSION should start with a SUMMARY of the subject addressed and then should highlight the results.

Acknowledgements

I would like to thank all the FLL collaborators (my colleagues) for the work we developed together and Professors Paulo Carreira and Sónia Gil for the opportunity I have been given.

References

[1] C. Cardeira, J. Sousa, J. C. Pinto, M. A. Botto, M. Ramalho, and J. S. da Costa, "Integrating mobile robots development and competitions in engineering curricula," 2006.
[2] C. Cardeira and J. S. da Costa, "A low cost mobile robot for engineering education," in *Proceedings of IECON 2005*. IEEE, 2005.

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