Runestone Cooperation in 15 ECTS Project Course

Lars Asplund and Jörgen Lidholm
Mälardalen University
Västerås, Sweden
{lars.asplund,jorgen.lidholm}@mdh.se

Abstract— A proposal for a cooperation project between two universities, that will involve undergraduate students in their last year studies is given. The subject will be to build something related to robotics including both hardware and software. The proposed form used for the cooperation has positive side effects apart from learning technological and scientific knowledge, such as understanding of cultural differences and how to in the future work in a multi national company that spans several time zones.

INTRODUCTION

Our students will most probably work in international projects in the future. The best way of preparing them for this is to face some of the issues that come with such international projects. This has previously been performed at Uppsala University (Sweden) in collaboration with Grand Valley State University (Michigan, USA) in a three-year project called RUNESTONE [1] where the first part took place from January to March in 1998 as a pilot study.

Our proposal is to start a similar project course of 15 ECTS points involving students from Sweden and Korea. There will be a number students from each university whereof one student will be local team leader. The students will work closely using appropriate communication techniques to solve a given problem.

The different knowledge base and cultural experiences will contribute to the projects success. But we must also acknowledge that the indifferences can also be an obstacle in the communication. Therefor extra precautions needs to be taken regarding the techniques of communication to make them as good as possible. It has been noted in earlier projects that the distance and lack of face to face meetings makes it harder for the students to get to know their associates in the remote team [1], [2].

The outcome from the earlier RUNESTONE project was positive and the observations from that project should give a good foundation for the proposed cooperative project.

PURPOSE

The main purpose of the project will be to give the students experience in international cooperation, and to find the best ways of communicating in this kind of project. Since this kind of projects has taken place earlier we should be able to prevent some problems from occurring again. We intend to address this by asking some of the researchers (in Computer Science Education) to become members of a advisory team.

LEARNING/TEACHING

In [1] the authors writes that they from their own experience as teachers know that having students explain concepts and solutions to each other is a very powerful learning technique. Some parts of the project will require students at one university to explain all kinds of things regarding the development to students at the other university. So hopefully this will improve learning for the students. Also this may relief some of the teachers work. In paper [2] they also observed that the teams where students permitted themselves to have healthy conflicts with both their local and remote teammates seemed more productive.

COMMUNICATION

In previous RUNESTONE projects the chosen techniques of communication was IRC (Internet Relay Chat), emails, video conferences, telephone conferences and distribution of documentation through a website [1], [2]. Though some techniques turned out to be less successful for some reason. For example they started the 1998 pilot study with a video conference with the two participating teams, which was not very giving due to the limited quality. This was also the experience of the telephone conference. The students primarily used IRC and emails.

PROJECT ASSIGNMENT

To make the joint project a success, the problem for the students to solve must be chosen such, that it is both challenging and suitable for this kind of project where some limitations may be introduced due to the physical distance. Of course it should also be something that is of interest for all parties. But the main focus must still be the way in which the project is managed. In the earlier RUNESTONE projects the task was to build a web controllable BRIO maze. The maze has a horizontal plane, which can be tilted using two knobs. And the object is to make a steel marble travel from a starting point to an end point without falling into a number of holes in the maze. The maze was to be controlled through a web-interface. Having a stepper motor for each knob and a monochrome camera to visualize the whole maze.

We suggest that the students start from a given robotics platform (for instance the AROS platform) and from that build some new hardware and software in order to accomplish a given task. Since the course is supposed to only be 15 ECTS, the project goal cannot be too sophisticated.

BUILDING A SUCCESSFUL TEAM

It is very important to have the technical knowledge at faculty level required for the project assignment. In [2] they concluded that having more milestones would help the progress of the project and it would give the students a better view of how far the other sub-teams has reached. Giving the participants a stronger feeling of that things are progressing and that they are in fact one team with one goal.

REFERENCES

[1] M. Daniels, M. Petre, V. Almstrum, L. Asplund, C. Björkman, C. Erickson, B. Klein, and M. Last, "Runestone, an international student collaboration project," *Proceedings of IEEE Frontiers in Education Conference*, vol. Tempe AZ, Nov. 1998.

[2] M. Z. Last, M. Daniels, V. L. Almstrum, C. Erickson, and B. Klein, "An international student/faculty collaboration: the runestone project," *ASIGCSE*, vol. 32, no. 3, pp. 128–131, 2000.