IEEE CASS Outreach Initiative 2013 – Final Report

Title: The Young Inventor Contest: a High School Outreach Initiative in a Developing Country

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Total number of participants: 32 on its beta version (will be repeated in 2014 with more participants)

How the budget was spent:

Date	Description	Amount
9/5/2013	Web domain www.joveninventor.cl	$ 37.27
9/6/2013	Web hosting	$ 82.21
11/6/2013	Arduino kits	$ 1,371.93
11/18/2013	Shipping costs, Arduino kits	$ 414.35
11/18/2013	Customs declaration, Arduino kits	$ 277.32
12/13/2013	Customs declaration, parts for Arduino kits	$ 78.56
12/26/2013	Catering service for the event	$ 327.83
12/26/2013	Contest prizes	$ 1,274.39
12/27/2013	Electronics parts	$ 277.46
12/31/2013	Student stipend (for 5 students)	$ 858.68
	TOTAL	$ 5,000

Brief description of the activity:

The preparation for the activity began in September, with the following tasks:

+ Web page design: www.joveninventor.cl
+ Arduino Tutorials: prepared by 5 Engineering students, placed in the web page
+ Short course material

Since this was a beta version, we decided to offer well-guided Arduino lessons to a group of students. This year we will repeat the experience in a hands-off fashion, open to a wider spectrum of students. The web page will be improved to accommodate the new concept.

The lessons were taught by 5 engineering students, members of the IEEE Student Chapter, who served as instructors. The lessons were offered in a 2-week period, 5 days a week, 4 hours every day. The attendees were 32 talented high-school students without any prior knowledge on Arduinos. After the 2 weeks, the students learnt the basics of electricity, electronic and electro-mechanical devices, sensors and computer programming. During the course, the students worked on experimental homework and a design project. The course finished on Thursday January 16th, 2014, with the Outreach Event.

The Outreach Event consisted on an outreach talk titled "Electronics, quad-rotors and the Higgs Boson", where I talked about a few projects I have worked in the past: UAV design and control, MAGLEV implementation (including a live demonstration of a homemade magnetic suspension system), quad rotors (including a live demonstration of a homemade quad rotor), chip design (including a screen projection of bare dies under a microscope) and my participation in instrumentation for particle physics experiments in the search of the Higgs Boson. I also acknowledged the IEEE and the CASS Outreach Initiative. During the talk, the attendees were offered a light lunch. After the talk, the attendees presented their projects. The course instructors and I served as judges. The 4 best projects were awarded with Arduino kits, including robotics shields. Here is a short description of the best projects:

+ A Clock with LCD screen, alarm, timer and a video game
+ A video game with LCD screen, LEDs
+ An oscillating fan with temperature feedback
+ A digital piano

The attendees were fully satisfied with the activity. Many of them mentioned that the activity helped them to clarify some misconceptions on the engineering profession. The instructors did a great job on motivating the students to achieve their best potential. Many of the students declared the intention to enroll in an engineering program in the future.

The activity was announced on the web page and in an email list among all Engineering Faculty Members at the College of Engineering, Pontificia Universidad Católica de Chile.

The activity appeared in the Engineering webpage news:

http://www.ing.puc.cl/alumnos-aprenden-programar-circuitos-electricos/