Project Location

Country:
Italy
City:
PADOVA

Organization

Organization Name:
ITIS Francesco Severi
Organization Type:
School

Website

http://www.itiseveripadova.gov.it

Privacy Law

Consenso al trattamento dei dati personali
Do you authorize the FMD to the treatment of your personal data?:
I do authorize the FMD to the use of my personal data.

Project Type

Education up to 18 years

Project Description

Description Frase (max. 500 characters):

"my Robot Sensor Kit - myRSK" is an project which dealt with the complex theme of the robotics and automation, through a series of didactic experiences.
This project aim at the diffusion of technical and scientific culture in the field of automation and

robotics, using Lego Mindstorms Robot and intelligence-based PC in Embedded Real Time with NI FPGA programmed with LabView. It has been a cooperation between didactics and industrial fields, purposing to create a hardware and software platform for the ?research and educational? area, which allows to elaborate advanced automation controls in a simple and instinctive way.

Project Summary (max. 2000 characters):

?My Robot Sensor Kit? is an extracurricular project which dealt with the complex theme of the robotics and
automation, through a series of didactic experiences.
The said targets have been possible thanks to both the components and the development environment
chosen: the first were the Lego? Mindstorms mechatronic components, which offered high availability and
low price; while, to program the embedded platform ?NI MyRIO?, it has been used NI LabVIEW, the
National Instruments? graphic environment. This combination offers an instinctive, powerful and reliable
way to do didactic automation.
The project was launched during the 2013?14 AY by the technical institute ITI ?F. Severi? (prof. Alessandro Scroccaro), homed in Padua, and supported by I.R.S. S.r.l. Padova and National Instruments Italy Srl (ing. Massimo Rapini). It was presented for the first time during the ?NIDays? in Milan on 12th March 2015.
Thanks to the project, the school won a funding of 20 000€ by the scholastic education and research
ministry (MIUR). The amount has entirely been investedinto equipment for the automation and the
mechatronics laboratories, thus enabling an ever?increasing number of students to take part in the project
in future.
During the past academic year (2014?15 AY), the project has seen the active participation of five
enterprising and deserving students, chosen from the last year (5th) and among three different courses of
the secondary school. Now the project is developed at the institute F. Severi and at other technicians institute, who have adopted this platform hardware and software.

How long has your project been running?

2014-11-29 23:00:00

Objectives and Innovative Aspects

Interest to students to the world of robotics and automation with advanced a practical approach.
The said targets have been possible thanks to both the components and the development environment

chosen: the first were the Lego? Mindstorms mechatronic components, which offered high availability and
low price; while, to program the embedded platform ?NI MyRIO?, it has been used NI LabVIEW, the
National Instruments? graphic environment. This combination offers an instinctive, powerful and reliable
way to do didactic automation.
Moreover, the Lego? Mindstorms products offered large range of hardware components, like sensors,
actuators and structural mechanic pieces, at a low price. Therefore it permitted to quickly assemble and
overhaul different prototypes of robots or, generally, automation systems, thus eliminating the problems
resulting from expensive and complex mechanical machining processes.

Results

Describe the results achieved by your project How do you measure (parameters) these. (max. 2000 characters):
Creating exercises robotics and automation for students. Motivate students beyond the curriculum to explore the issues encountered Realization of an advanced laboratory of robotics and mechatronics equipped with programmable instrumentations and PC embedded controllers. Encourage team work in the studens. Provide opportunities for discussion and stimulus for students and teachers.
How many users interact with your project monthly and what are the preferred forms of interaction? (max. 500 characters):

Currently the project is affecting experimentally about 40 students dell'Istitito F. Severi and many other institutes.

Sustainability

What is the full duration of your project (from beginning to end)?:
Less than 1 year
What is the approximate total budget for your project (in Euro)?:
From 10.001 to 30.000 Euro
What is the source of funding for your project?:
Grants
Specify:
Istituto Tecnico Industriale Statale, articolazioni Automazione e Meccatronica
Is your project economically self sufficient now?:
No
When is it expected to become self-sufficient?:
2015-07-30 22:00:00

Transferability

Has your project been replicated/adapted elsewhere?:
No

What lessons can others learn from your project? (max. 1500 characters):

Learn programming of robots and automated systems with LabVIEW.
Learn principal specification of sensors and transducers in robotic and automation.
"Playing learn..."

Are you available to help others to start or work on similar projects?:
Yes

Background Information

Barriers and Solutions (max. 1000 characters):
Principali ostacoli sono stati di tipo economico: risorse finanziarie per completare l'attrezzatura inizialmente prevista (finziamento ricevuto solo per il 40% di quanto preventivato ed inizialmente richiesto). Mancanza di fondi per pagare trasferte agli allievi ed ai docenti coinvolti. Impossibilità di pagare il presnonale tecnico per realizzare componenti ed attrezzature "custom". Impossibilità di pagare il personale ausiliario dell'Istituto per avere una copertura pomeridiana oltre le 17:00. Difficoltà di trovare sponsor nel territorio per estendere l'iniziativa ad altre realtà. Al fine di superare questi limiti stiamo cercando visibilità commerciale, attreverso il partner aziendale IRS Srl di Padova, al fine di commercializzare la piattaforma hardware e software così sviluppata.
Future plans and wish list (max. 750 characters):
Estendere il progetto alla visione artificiale applicata in ambito robotico, sempre attraverso le librerie Vision di NI LabView.
Robotica [1] robot [2] Real Time [3] PC Embedded [4] National Intruments [5] myRSK [6] myRIO [7] myDAQ [8] Lego NXT [9] Lego MindStorms [10] FPGA [11] Automazione [12]

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Links
[1] http://2017.gjc.it/en/category/parole-chiave-separate-da-virgole/robotica
[2] http://2017.gjc.it/en/category/parole-chiave-separate-da-virgole/robot
[3] http://2017.gjc.it/en/category/keywords-separate-with-commas/real-time
[4] http://2017.gjc.it/en/category/keywords-separate-with-commas/pc-embedded
[5] http://2017.gjc.it/en/category/keywords-separate-with-commas/national-intruments
[6] http://2017.gjc.it/en/category/keywords-separate-with-commas/myrsk
[7] http://2017.gjc.it/en/category/keywords-separate-with-commas/myrio
[8] http://2017.gjc.it/en/category/keywords-separate-with-commas/mydaq
[9] http://2017.gjc.it/en/category/keywords-separate-with-commas/lego-nxt
[10] http://2017.gjc.it/en/category/keywords-separate-with-commas/lego-mindstorms
[11] http://2017.gjc.it/en/category/keywords-separate-with-commas/fpga
[12] http://2017.gjc.it/en/category/keywords-separate-with-commas/automazione