



# Global Junior Challenge

Projects to share the future

Pubblicata su *Global Junior Challenge* (<http://2017.gjc.it>)

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## Paese, Città/Regione

**Paese:**

Italy

**Città:**

PADOVA

## Organizzazione

**Nome dell'ente o associazione:**

ITIS Francesco Severi

**Contesto dell'ente o dell'associazione che presenta il progetto:**

School

## Sito Web

<http://www.itiseveripadova.gov.it>

## Legge sulla privacy

Consenso al trattamento dei dati personali

**Acconsenti al trattamento dei dati personali?:**

**Autorizzo la FMD al trattamento dei miei dati personali.**

## Tipo di progetto

Educazione fino ai 18 anni

## Descrizione del progetto

**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), based 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 invested into 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.

### **Da quando è funzionante il vostro progetto?**

2014-11-29 23:00:00

### **Obiettivi ed elementi di innovazione**

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.

## Risultati

**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 students. 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'Istituto F. Severi and many other institutes.

## Sostenibilità

**What is the full duration of your project (from beginning to end)?:**

Meno di 1 anno

**What is the approximate total budget for your project (in Euro)?:**

Da 10.001 a 30.000 Euro

**What is the source of funding for your project?:**

Finanziamenti pubblici o privati

**Note eventuali:**

Istituto Tecnico Industriale Statale, articolazioni Automazione e Meccatronica

**Il progetto è economicamente autosufficiente?:**

No

**When is it expected to become self-sufficient?:**

2015-07-30 22:00:00

## Trasferibilità

**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?:

Sì

## Informazioni aggiuntive

### Barriers and Solutions (max. 1000 characters):

Principali ostacoli sono stati di tipo economico: risorse finanziarie per completare l'attrezzatura inizialmente prevista (finanziamento 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 personale 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, attraverso 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 Instruments](#) [5] [myRSK](#) [6] [myRIO](#) [7] [myDAQ](#) [8] [Lego NXT](#) [9] [Lego MindStorms](#) [10] [FPGA](#) [11] [Automazione](#) [12]

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**URL di origine:** <http://2017.gjc.it/it/progetti/my-robot-sensor-kit-myrsk-project-how-teach-robotics-funny-way>

### Collegamenti

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