Robotics Workshop 2017

Organized by IEEE BVM Students Chapter

At **_BVM Engineering College_** - 13th and 14th September 2017
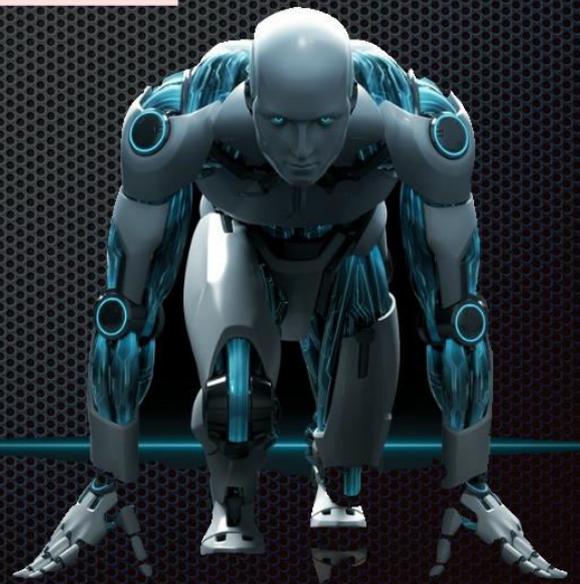
Details about Workshop

Subject: - **Introduction to Robotics and Arduino.**

How it will be useful to students: - There is considerable anecdotal evidence that students respond well in subjects involving programming of robots. Programming can be too abstract. By having to control a physical robot and seeing what goes wrong, students learn what robots can and can't do. They also learned the need for precise instructions. There's no doubt that there will be a need for people to be involved in programming mechanical devices in the foreseeable future. By programming robots, students can discover if they have aptitude and interest in a job market of the future.

What skills will be developed:- Programming Skill will be developed. They will read data from board, on sensor and social network.

Branch: - Electrical, Electronics, Electronics and Communication, Mechanical.

Year: - 1st Year

Date: - 13th and 14th September 2017

Time: - 8:30 am to 10:30 am IST

Venue: - A 216, A Block, BVM Engineering College.

Total Entries: - 79

Introduction

A 2-days workshop on Introduction to Robotics and Arduino coding for the students of 1st level undergraduates was organized on 13th and 14th September 2017 under the banner of IEEE BVM Students Chapter at Birla Vishwakarma Mahavidyalaya.
This workshop comprises of giving the participating students an idea about Robots, Robotics, Types of Robots and their applications, Career in Robotics, Introduction to Arduino, Introduction to Bluetooth RC Car, live demo of building Bluetooth RC car, test running this car, doubt clarification session, last notes and conclusion.

Abstract

The present contribution report initiative of IEEE BVM Student Branch involving students in creative activities that builds motivation for their future engineering studies. The IEEE Student Branch at Birla Vishwakarma Mahavidyalaya has always attempted to put more emphasis on hands-on learning and training for fellow students through various workshops and training sessions. As a part of such activity, workshop session on basics of robots and robotics are being conducted for the last 2 years. Participation has been from a wide range of backgrounds, from different streams and different undergraduate levels. Initial aim of the workshop sessions was to motivate students in design, estimation, fabrication and testing their own ideas of basic controlled robots. During the course of events in last couple of years several interesting findings could be identified. It is felt that in order to perform well in their workplace, as well as to be responsible citizens, students are required to not only develop mastery of a particular subject, but civic, social, interpersonal and workplace skills as well. In addition to reinforcing concepts from earlier and concurrent courses, such workshops can serve as a platform for exposing students to inter-disciplinary topics that appear in greater depth in later courses. Also, students mature in areas such as oral and written communication, awareness of professional ethics issues, and working effectively in a team-based setting. Mixing of students from different disciplines and different grades greatly enhances sense of fellow feeling and team spirit. Such workshops, being conducted by students themselves, increases the sense of belongingness, inculcates maturity, sensibility, leadership qualities among the organizing students.

Day 1 of Workshop

On 13th September 2017, Electrical department of BVM conducted the 1st day workshop on "Introduction to Robotics." Workshop was conducted by three 2nd Year Students of Electrical Engineering BVM. First Devansh Parikh talked about IEEE and its activities conducted in our college and presented a keynote on "Introduction to Robots and Robotics"; Second Dhruval Raj, presented keynote on "Introduction to Arduino and its IDE"; lastly Helly Gondalia, presented simple applications of Arduino on LED and its coding. The example comprises of "S.O.S Morse Code" and "Traffic light Signals" using LED and Arduino coding. Around 75 students from 1st Level Electrical, Electronics, Electronics and Communication and Mechanical branch took part in this workshop.

In the first session students got familiar with the term Robot, how to identify whether a machine is a Robot or an autonomous bot, Robotics, Aspects of Robotics, philosophy of AI (Artificial Intelligence), Brief on Machine Learning and types of Robots. Informative videos from Boston Dynamics were shown to students.

In the next part a brief introduction to Arduino was given 1st Year students. They got familiar with various development boards of Arduino and learnt the development environment for Arduino. Working with Arduino I/O pin was taught and functions of various embedded components were explained. Later simple application of Arduino like blinking LED and its coding was explained.

In the last part of the session, more applications of Arduino were explained and showed. Applications included "S.O.S Morse code" using simple LED and Arduino coding; "Traffic Light Signaling" using LED and Arduino coding.

In the meantime students were free to ask any questions regarding the domain if they had any doubt about any topics explained. Students without any hesitation asked questions and after hearing answers from our presenters they were satisfied.

Overall student learnt the basics of working with Arduino and gained basic knowledge of various Arduino development boards; Programming environment; onboard features of Arduino Uno.

Day 2 of Workshop

Next day on 14th September 2017, 2nd day of the Workshop was on "Bluetooth Controlled RC Car" using Arduino UNO and Bluetooth Module HC -05 was presented by Neel Shah of 2nd Year Electrical. All the basics of the car like its analogous design to our daily life using navigation systems was shown pictorially to 1st Year students to get a basic idea of the functions of different components used in running the RC car. Details about the components used were probably along with their functions and why they were used.

Then in next session live demo of making the "Bluetooth Controlled RC Car" was presented and done by Harsh Patel and Yash Rana of 2nd Year Electrical. They explained the wiring of motor drivers L293D to Arduino and motors of RC car chassis.
All the doubts of students were cleared by on the spot questioning and answering.
In the end the RC car got finished wiring and coding in Arduino. Then the operation of this RC car was done in front of students and it worked really well. All the students were amazed by looking at the way this RC car was being controlled by Bluetooth through a mobile phone. Even chance was given to 1st year students to control this RC car on their own and they enjoyed that experience a lot.

In the end the scenario about robotics in India was discussed by Devansh. He gave a great speech on the needs that are required to be implemented in a College curriculum for the development of skills in students who want to pursue robotics as a career. Reasons about why Robotics development is lacking behind in India was also discussed. 1st Year students understood the needs and were thoroughly motivated to make a change in the system. They were also given task to find out the everyday problems that a robot can easily rectify.

Feedback from the students was collected and it suggested that they welcomed this initiative and they are motivated to explore more dimension in this platform also they are willing to do projects, research work and developing robots for competitions in future.