

DAY 1 (14th October 2018)

INTRODUCTION TO THE BASICS OF EMBEDDED SYSTEMS

Well, the very first day of the workshop. All the participants gathered in the said venue with excitement screaming out of their hearts. The participants were then introduced to the trainers Mr. Liqzan Manna and Mr. Rohan Naik. They were quite gullible and down to earth in their approach of training the students and made a promise that “no student would go unbenefited after the completion of the workshop”.

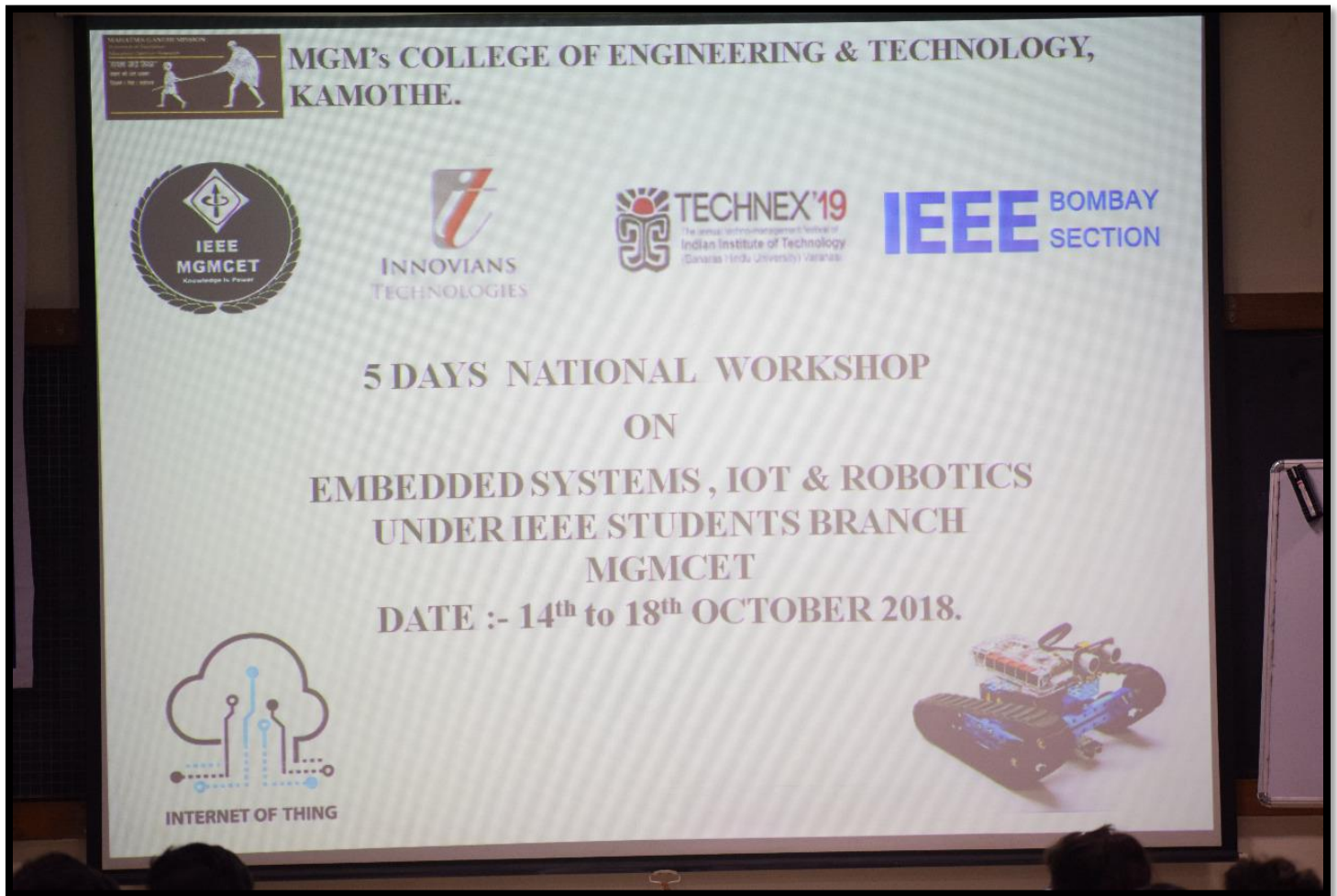


Fig 1 :- Beginning of Workshop

The trainers introduced the participants to the concept and theory of embedded systems and apprised them about their usage in daily life. Then the projects were started which included a whole lot of usage of Arduino UNO r3 along with certain basic sensors, Light Emitting Diodes (LEDs). The projects began on an easy note. However, as it progressed, to add more value and make the workshop interesting, the trainers kept on enriching the content which all the participants found quite challenging to complete.

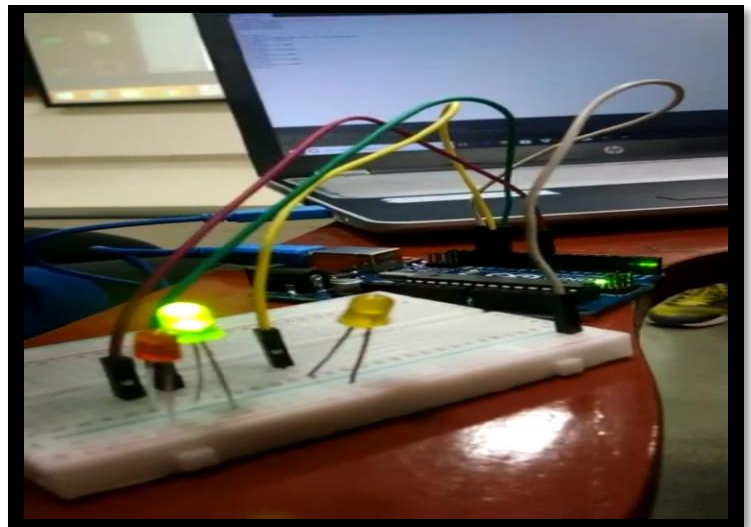
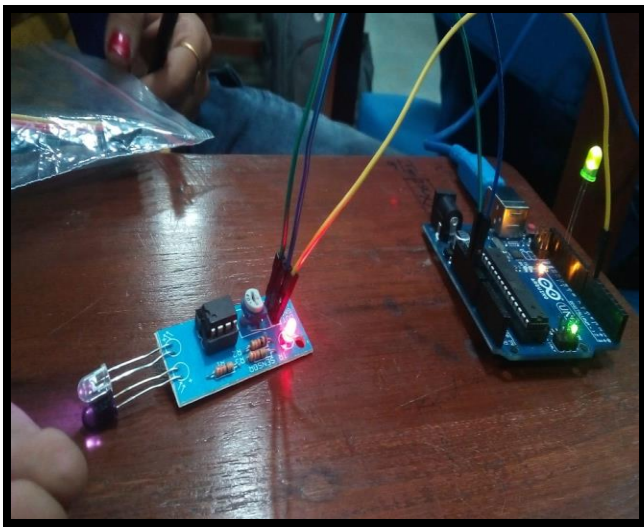


Fig 2 :- Introduction on embedded system and first project

On the first day, 8 projects were completed that enlightened the students with a rich knowledge of Arduino and its programming, Infrared Sensors (IR sensors), Ultraviolet Sensors (UV sensors) and LEDs. The day came to an end by responding to all queries and a quick sneak peek into the next day projects. The participants dispersed with great curiosity and craving for more.

DAY 2 (15th October 2018)

MORE OF SENSORS AND BLUETOOTH & CELEBRATION OF IEEE DAY

The day started with some of the participants coming up and giving an honest feedback about the workshop day 1, what they liked the most and what they found not so good. Then all the students focused on the projects for the day. The very first project involved knowing the concept and working of LDR. It was followed by the working of temperature & humidity sensors. Then the students were introduced to Bluetooth sensors and they built 4 projects using it, some of which included reading the values of temperature & humidity sensors on their phones, making a mini home automation system and controlling it using android smartphone and their voice! Sounds cool right.....!! In totality, that day 6 projects were completed. But wait, the day didn't end with that. After the workshop session, IEEE student branch MGMCET celebrated IEEE DAY that included cakes being cut and a motivational speech by the respected principal of MGMCET which left the experienced IEEE members with satisfaction of accomplishment and the young members with zeal and enthusiasm to do even better than their seniors. Well that's the end of Day 2 with all the participants leaving college premises with a big smile on their faces, all thanks to the workshop and the yummy dark chocolate cake!

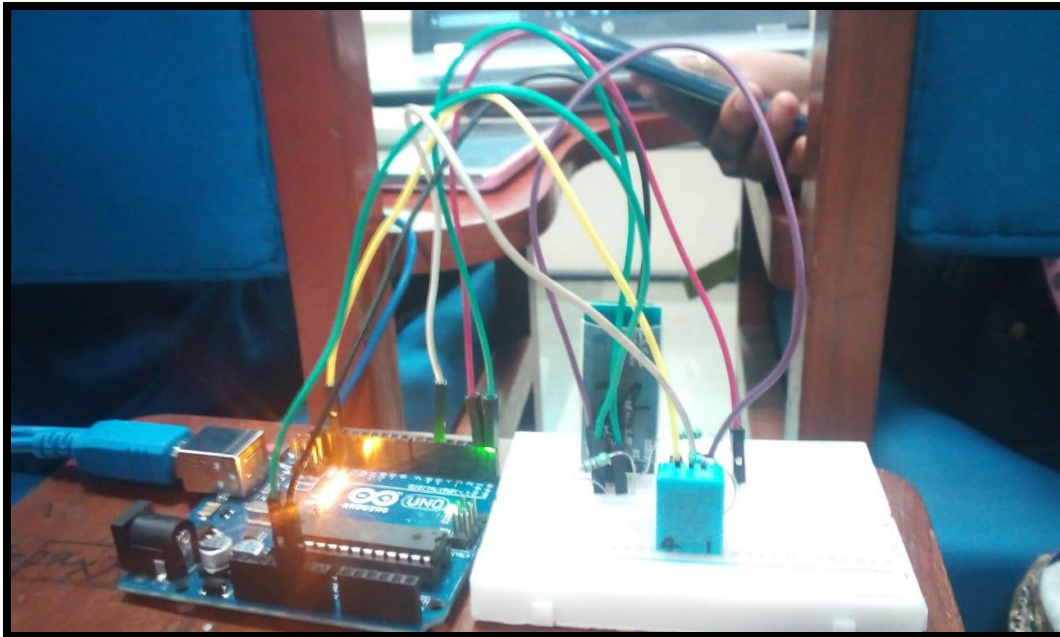


Fig 3:- Project on Reading Humidity and Temp of environment





Fig 4:- Celebration of IEEEDay

DAY 3 (16th October 2018)

INTRODUCTION TO THE BASICS OF INTERNET OF THINGS

Two days down, moving on to Day 3. The day started with the trainer teaching the participants how to make their very own app using Massachusetts Institute of Technology (MIT) App Inventor giving them step by step instructions on the same. The participants made an app that can search for Bluetooth connections, connect to the required Bluetooth device and then operate a LED or any real time device) connected to that Bluetooth from anywhere using anybody's android smartphone and Arduino. Then the participants learnt the concept of ethernet and network bridging which was used to determine the IP address of the given Arduino. Moving on further, participants tweeted regarding the temperature and humidity from Thingspeak.com using the temperature & humidity sensors and an Arduino. This all happened without actually opening their twitter accounts! Also, ThingSpeak was used to create a channel through which any person around the world can operate the circuit they made, if provided with the account details and password. Well that's the end of Day 3



Fig 5:- Explanation on IoT

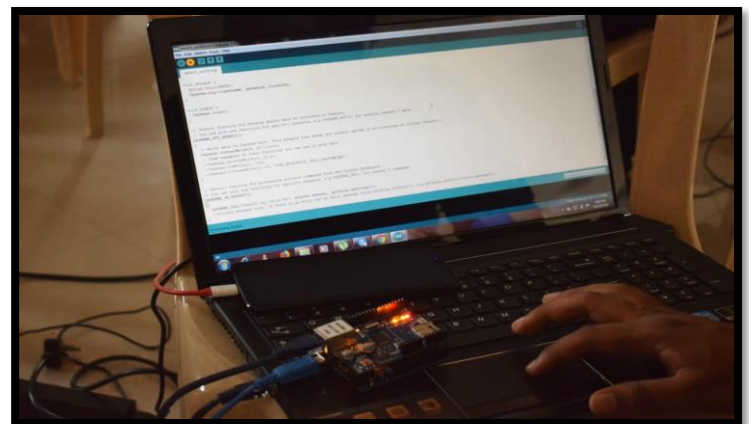
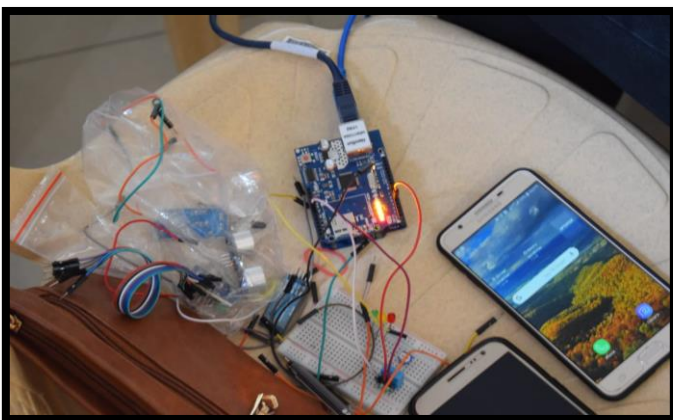


Fig 6 :-Home automation using android app

Day 4 (17th October 2018)

INTRODUCTION TO THE BASICS OF ROBOTS

On the fourth day of workshop the concept of Robotics was introduced to the students. Various parameters regarding types of Robots, applications were also touched. After the introductory part students wrote their very own program LINE FOLLOWER ROBOT.

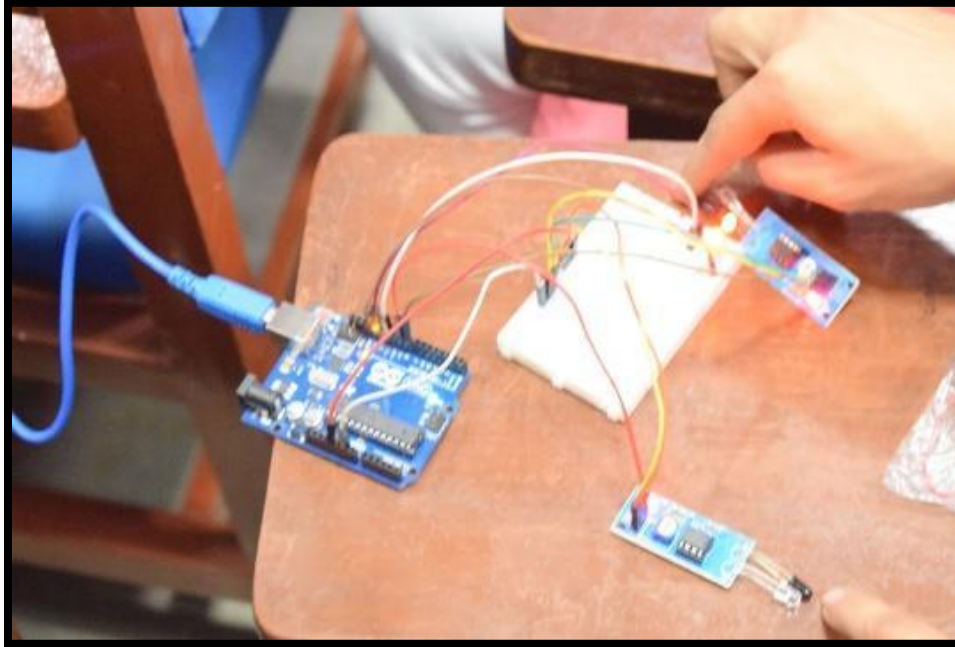


Fig 8:- Programming for two IR Sensors.

The day also brought competitive spirit amongst the students as prior information IoT Competition was conducted. The students had to design an Bluetooth Enabled Application with the help of MIT App Inventor for the given problem statement. The competition was off around 45 minutes and two teams were declared as the winners who were given the opportunity to visit Varanasi for further Competition.



Fig 9:- Winners of IoT competition



Fig 10:- Runner Up of IoT competition

After the competition students again involved themselves in the working of their very first robot with actual model. The project was implemented using the initial hardware components given to the students as well as some mechanical components.

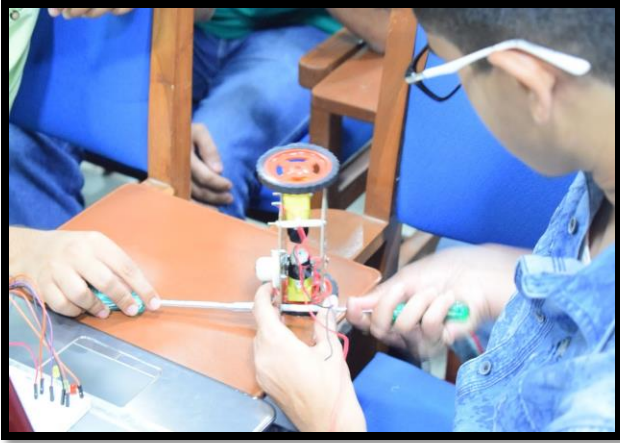


Fig 11 :-Students making their Robots.

The Line Follower Robots were then tested on the line follower track for knowing the actual functionality and working principle of the same. Doubts related to the working issues of the Robots were also cleared by the trainers.

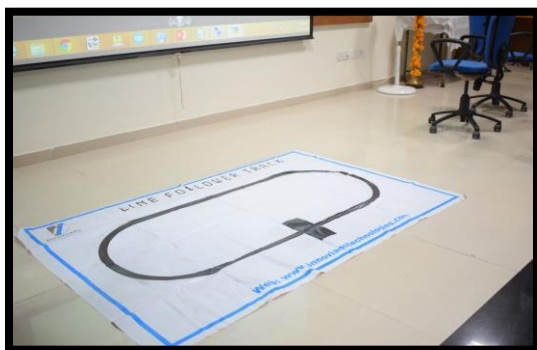


Fig 12:- Line Follower Track

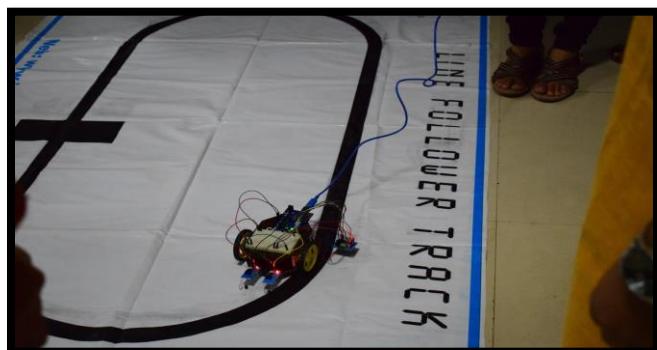


Fig 13:- Implementation of the Robot.



Fig 14:- Mr. *Liqzan Manna* sir Solving Doubts of the Students

Day 5 (18th October 2018)

CONTROLLING ROBOTS BY ANDROID APP

The last day of the session started with introduction of IEEE members by a small video presented by Media Head of IEEE Student Branch MGM CET Pankaj Bhagat. Also with the glimpses of vision and mission of IEEE. Later on the workshop was enlightened by the valuable words of honourable D.G. Sir, Respected Principal Sir and HOD Sir.



Fig 15:- Trainers with Respected Dignitaries.

Later on an obstacle avoider Robot was made by the students with the same circuit of LINE FOLLOWER ROBOT. Also an android application using MIT APP INVENTOR was designed by the students to control their robots with the help of Bluetooth. Both the projects were successfully implemented by the students and were also tested. The next project the students implemented was Voice controlled and gesture controlled robot. Students successfully controlled their robots with the applications provides to them like.

Fifth day ended on the note of Robotics Competition conducted by the trainers. The problem statement was that the students had to make an Edge Avoider Robot in about 45 minutes. The winning team was also given a chance to visit Varanasi for further competition. At the end of the day all the participants were felicitate with certificate of participation while the competition winner with Certificate of excellence.



Fig 16:- Winners of Robotics competition

During the workshop, students asked questions regarding the topics and were very satisfied with the answers from Trainers. Winners of IoT and robotics competition was awarded by getting a chance to showcase them self in IIT Varanasi. Also, Mr. Liqzan Manna Sir extended thanks to all the IEEE volunteers, Neda Khan Mam for organizing the workshop. Both the Trainers were given a Token of Appreciation and the trainers were awarded with Certificates and winners of competition were appreciation with certificate of excellence.



Fig 17:- Token of Appreciation to Mr. Rohan Naik sir

Fig 18:- Token of Appreciation to Mr. Liqzan Manna sir



Fig 19 :- End of workshop picture with DG Sir, Principal Sir, HOD Sir, Faculty, IEEE Members and Participants

We thank The Management, Principal Sir, HOD Sir, Trainers, Participants and supporting faculties for their support.

Attendance 101 Students, 22 IEEE Volunteers, 2 Faculty member, 2 Trainers.

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