DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Report on Value Added Course – "EMBEDDED ROBOTICS"

The department of **Electrical & Electronics Engineering** has organized a value added course on "Embedded **Robotics**" for III B.Tech EEE students from **21st Nov to 26th Nov 2022**. **Mr. R. Vikas Reddy, Managing Director, Technotron Electronic Solutions, Nellore**, one of the resource persons for the value added course. The course was started on 21st Nov 2022 at 9:30 am in EEE Seminar Hall with an inauguration function followed by the session.

The resource person has explained about Embedded systems & Robotics as follows:

A system which is programmed to control and operate a specific functions within a mechanical or electrical system in real-time, such a system is an known as embedded system. Most of the microprocessors are resulting components of embedded systems. A device developed from embedded systems technology has low power consumption, smaller size and high operating ranges. These characteristics are the reasons why embedded systems is finding its way in every industry based on electronics and thus, creating endless application for its usage as a significant technology.

For high precision jobs and under dangerous working conditions for humans the world is now taking advantage of robotic application and technology. A robotic application has primarily three main components:• Mechanical device, to interact with surroundings.

• Sensors

• Embedded System, to bridge the communication between the mechanical devices and sensors. With the wide of use of robotics application and advancement of technology around the globe, it is important for humans to acknowledge the Asimov's Three Laws of Robotics which are as follows:

• Robots are the result of human intelligence; thus, they must not harm humans.

• They should be programmed to follow commands and must be precise in their completion of task.

• Robots must have the intelligence to protect themselves in situations of emergency.

Thus, we can understand that a mechanical device which has the ability to react to a situation logically by using the intelligence programmed in it by humans can be classified as a robot.

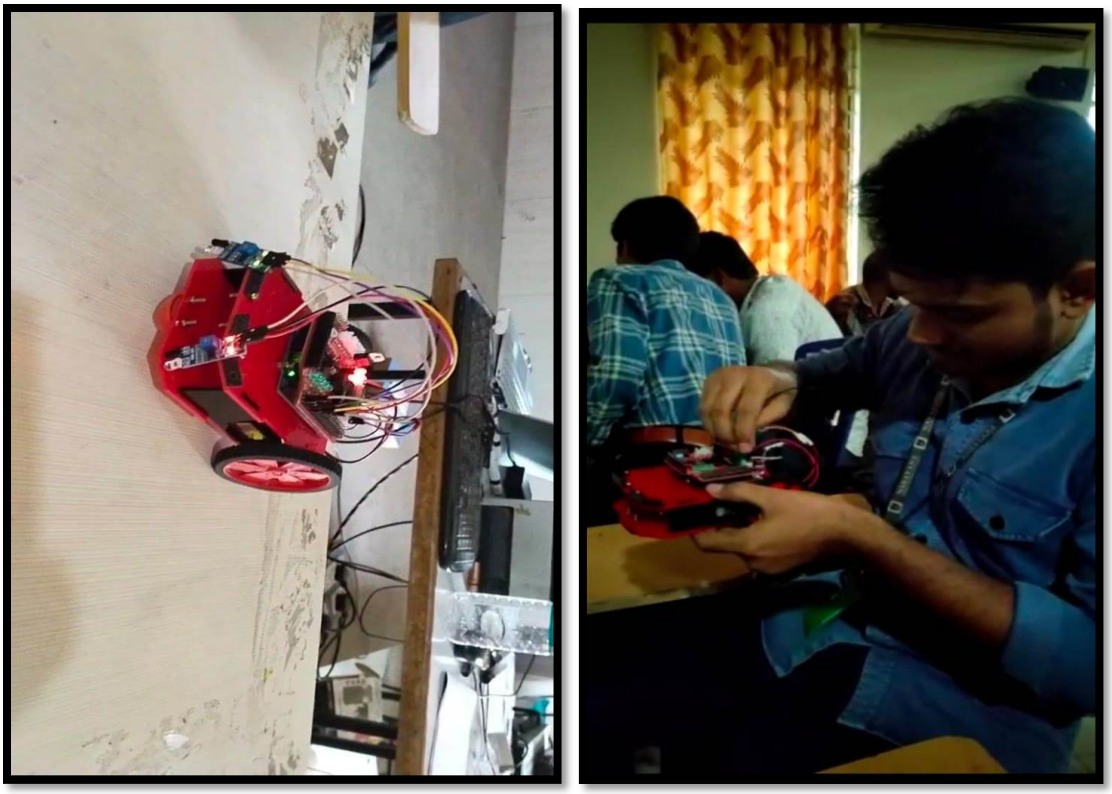
An intelligent system that has the ability to solve a specific problem, being an integral part of some large system with hardware and mechanical parts which can perform a specific task. As embedded system can perform specific task, engineers who program has optimized it by reducing the size and cost as well as has increased the reliability and performance. Some most common applications of devices that are created using embedded systems are video games, washing machines and microwaves. An embedded device has the ability to measure, control, display or calculates information.

3. Programmable Devices: The two of the most significant programmable devices in embedded systems are microprocessor and microcontrollers. These two are basically multipurpose programmable devices that can accept digital input, process it according to the commands or program and generates output accordingly. Today's embedded systems are generally based on microcontrollers but in the case of complex systems microprocessor also finds its application. This is because microprocessor chip does not contain memory, peripheral interface circuits and other such components which are to be connected externally whereas microcontroller contains CPU, memory (RAM/ROM), input/output ports and timers resent on a single chip. Also, microcontroller is small in size, has low cost and low power consumption as compared to microprocessor.

Programming for embedded system is done on a microcontroller, that is, an already coded program is transferred into the flash memory of microcontroller in order to function as per given commands. There are various software on which the coding part or programming can be done but most commercial and industrial viable software is AVR studio versions. Codes are written in C language and this software allows us to burn the code directly into the microcontroller memory in the form of HEX file once compiled.

Dr G. Venkateswarlu, HOD of EEE Department have felicitated the resource persons in valedictory function i.e, on 26th Nov 2022 and motivated the students that to develop innovative products with effective use of Robotic technology to enhance their knowledge.

Mr. R Vikas Reddy explaining about Embedded Robotics



The robot designed by the batch of students

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