



KSSEM
K S SCHOOL OF ENGINEERING AND MANAGEMENT

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Report on

Hands on Training on Interfacing of Sensors



Organized by IEEE Student Branch, KSSEM

In association with IEEE Bangalore section.

Topic: Hands on Training on Interfacing of Sensors

Date of event: 21st May, 2023

Venue: Aryabhatta Seminar Hall, Dept of ECE, KSSEM

Number of participants: 60

Targeted Audience: 3rd year ECE students

Event Coordinator: Dr. Girish V Attimarad, Professor, KSSEM

The IEEE Student branch in association with the ECE department, of KSSEM, had organized a Hand on training on, “**Interfacing of Sensors**” on 21st May, 2023 at 9:30am IST.

The Hands on Training was conducted at K.S School of Engineering & Management, Bangalore. The training was given by Mr Rahul Kumar A and Mr Bharath Gowda P S, Founder and Engineer, Inversa Technosoft. Dr Ramanarasimha, Principal, Dr.K Senthil Babu, HoD of ECE, graced the event with their presence. The Hands on training was attended by both faculty members and students.

The objective of the training is given below;

- To introduce the students to various commonly used sensors and their working principles;
- To interface the sensors with microcontrollers and write simple code to acquire data from the sensors.
- To formulate applications based on the knowledge acquired.



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Topics Covered:

The training covered various aspects of interfacing. Some of the topics discussed were:

- Introduction to Arduino Microcontroller
- Different types of Arduinos
- Interfacing RGB to LED using Arduino
- Interfacing IR Sensor
- Interfacing ultrasonic sensors
- Interfacing LDR using Arduino

At last all the students discussed about their mini project individually.

Introduction to Arduino Microcontroller

Arduino is an open-source project that created microcontroller-based kits for building digital devices and interactive objects that can sense and control physical devices.

Different types of Arduinos

- 1) **UNO and MKR** is fairly beginner friendly, with the more expensive MKR offering greater connectivity (WiFi and Bluetooth) options.
- 2) **Mega** is good for robotics projects, including CNC machines and 3D printers.
- 3) **Nano** families are cost effective alternatives to the MKR, and are good for networks of sensors.
- 4) **Due** is good for efficient graphics and sound processing.
- 5) **Leonardo and Micro** are good alternatives to the UNO, particularly for USB connectivity.
- 6) **Yun** offers an embedded Linux system which can function as a multi-tasking server
- 7) **Portenta** is incredibly powerful.

Interfacing RGB to LED using Arduino

RGB LEDs consist of one red, one green, and one blue LED. By independently adjusting each of the three, RGB LEDs are capable of producing a wide color gamut. Unlike dedicated-color LEDs, these do not produce pure wavelengths. Modules may not be optimized for smooth color mixing.

Interfacing IR Sensor

The IR sensor has a **3-pin** connector that interfaces it to the outside world. The connections are as follows: **VCC** is the power supply pin for the IR sensor which we connect to the 5V pin on the Arduino. **OUT** pin is a 5V TTL logic output. **LOW** indicates no motion is detected, **HIGH** means motion is detected.



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Interfacing Ultrasonic sensors

To interface an ultrasonic sensor with an Arduino board, you need to **connect the Vcc pin to the 5V pin and the GND pin to the ground (GND) pin of the Arduino board**. The Trigger pin of the sensor should be connected to a digital pin of the Arduino board.

Interfacing LDR using Arduino

LDR sensor module is used to detect the intensity of light. It is associated with both analog output pin and digital output pin labeled as AO and DO respectively on the board. When there is light, the resistance of LDR will become low according to the intensity of light. The greater the intensity of light, the lower the resistance of LDR. The sensor has a potentiometer knob that can be adjusted to change the sensitivity of LDR towards light.

Finally with all the interfacing connections the objective of the hands on training session was achieved and also the hands on training were organized for the skill development which was achieved. Students cleared their doubts and were sure about the connections of Arduino.



Fig 1. Inauguration of Hands on training on interfacing of sensors



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Fig 2. Students Interfacing various sensors and to Arduino



Fig 3. Principal, Guest Speaker, Faculties and Students present in the Event



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