WORKSHOP REPORT ON

"Advanced IOT program using Texas Instrument MSP 430"

Date: 21.04.2018 to 22.04.2018

Objective of the workshop:

The objective of this workshop is to provide an opportunity for students to get aware of Advanced IOT programs and usage of Texas Instrument MSP 430 Microprocessor thereby developing a stepping stone towards the development of an Embedded System.

Venue: Microprocessor and CCN Lab, Faraday block, SCE

Coordinated by: Prof. Vani V and Prof. Vani A

In Association with: Telos Technologies, Bengaluru.

Number of Participants: 43

Inauguration and welcoming the speaker Mr. Sagar and Vivek, Application Engineers, Telos Technology, Bangalore by Prof.Sandhya Rani MH,HOD Dept of ECE, SCE , Bangalore.

Prof. Sandhya Rani MH, HOD ECE, SCE. welcoming the speaker Mr.Sagar, Telos Technologies, Bangalore.

Summary of Workshop:

Day1:

Session 1:

1. Introduction to IOT

  ➢ Application of Internet of things
  ➢ Building blocks of IOT that is sensors and actuators, connectivity, peoples and processes.
  ➢ Introduced IOT product from TI
  ➢ TI solution for IOT
  ➢ Encounters in the Internet of Things

2. Introduction to MSP430 Processor

  ➢ Architecture of MSP430 F5529LP
  ➢ Features of MSP430
  ➢ Comparison of MSP430 with other controllers

3. Practical Session

  ➢ Introduction to Energia software
  ➢ Introduction to CCSV6.1 Code Composer studio V6.1

Session 2:

1. Hands on session on MSP430 F5529LP using Energia software

  ➢ How to write program in Energia
  ➢ How to interface external LED with MSP430
  ➢ How to control LED using switches
  ➢ Interfacing Potentiometer with MSP430
  ➢ To control the speed of DC Motor using potentiometer

2.Using CCSV6.1 software

  ➢ To blink an LED
  ➢ To control LED using switch

Day 2:

Session 3:

1. Handson session on IOT using Energia

Introduction to CC3100 wifi booster pack

Configuring CC3100 as a web server and controlling on board peripherals using smart phone

  ➢ To control the peripherals of the board anywhere over the internet, using https protocols to send and receive data from web browser
  ➢ Enter ssid and password in code and connect the device to internet, upload the code to CC3100
  ➢ Open the web Browser and enter IP address which is displayed in serial monitor
  ➢ Control LEDs using webpage.

2. To create a chat server

> A simple server that distributes any incoming message to all the connected clients by using simple telnet client application and entering the IP address and type message.
> We can see the client input in serial monitor

Session 4:

1. Using Pubnub for sending sensor data to cloud

> Creating account in cloud service using Pubnut console, note the publisher and subscriber keys and enter them in code.
> To microcontroller interface Grove Base Booster pack of seed studio and potentiometer and wifi module
> Upload the code
> Connect Wifi then automatically connected to pubnub server and we publish message or data
> At cloud side in Pubnub console sensor values are received

2. To visualize sensor data

> Using Freeboard.io to visualize the IOT, which provides a cloud side dash board.
> Create our own dash board by giving data source: here use Pubnub and publisher and subscriber key and thus, Freeboard receivers the payload from data source and represented in the format selected Ex: Sparkline, guage, graph etc.
> Explained to creat a wifi connected IOT sensor that calls when sensor values exceed threshold level using temboo.com and nexmo.com

Lab sessions during the workshop.

Students and faculties participating in the workshop.

Prof. Vani V & Prof. Vani A   *Prof. Sandhya Rani M H*

FDP/Workshop/Seminar Coordinators   *(HOD ECE)*