

Gandhinagar Institute of Technology
A Report on
“5 Days STTP on Internet of Things (IoT) using
ARM Cortex M4”
(19th – 23rd August 2019, Monday - Friday)

About:

Electronics & Communication Department organizes various co-curricular activities in accession with being focused on regular academics for exploring and executing the skill and ingenuity of engineering students. This 5 Days STTP, sponsored by Gujarat Council on Science and Technology was to bring together established experts, students, research scholars and Faculties from various engineering institutes and engineering departments to discuss Internet of Things (IoT) and application of IoT in various branch of engineering.

Objective:

The program will provide a valued platform for participants to exchange and explore the latest views on technological developments in the field of Internet of Things (IoT). In the present scenario IoT (Internet of Things) is the most advance technology in the field of embedded system design. It is the technology which interconnects different objects having sensors, computational device and connectivity with the internet and through this network they communicate with each other. Controlling of such connected objects is also possible if required. Number of applications can be designed based on this technology. It is even possible to make a unique hobby project and have that replicated at a large scale for actual industrial issues and can even be used to make prototypes for testing various ideas. This whole process will also promote lateral thinking, design thinking and consumer-oriented design process amongst the participants.

Event:

Present on the occasion were Dr. H N Shah, Director, GIT, Prof Hardik Bhatt, Convener, Prof Mitul Maniar, Coordinator, Prof. Chintan Patel, Co-Coordinator of the STTP. Also present were other faculty members of the institute. More than 60 participants including students from Core Engineering branches participated in this seminar.

An inaugural function was held at A-105 Seminar Hall of GIT on Monday at 9:00 AM, 19th August 2019. Welcome speech was delivered by Prof. Chintan Patel, wherein he welcomed all the participants and introducing Mr. Rohit Prajapati. Prof. Hardik Bhatt opened the STTP with an introduction to IoT.

After the introduction by Prof. Hardik Bhatt, Mr. Rohit took over the session, wherein he touched deeply into actual real-world scenarios where in IoT is used and applied, for the up and coming applications. He then slowly introduced the role of current crop of microcontrollers and how they are being leveraged in the IoT field by being able to be connected to Wi-Fi and being so small. These traits are ideal ones needed to develop any IoT based application or even prototypes. He then touched upon the major players in the IoT industry and ARM being one of them, focused a bit more on it. The next segment was distributing the Cortex M4 kit to the

participants and explaining its working and various functions and interfacing it with the Energia software, which will be now used to code and load the programs into the Cortex M4 board.

Day 2 began where Day 1 was ended. The participants picked up pace upon what all tools and its dependencies are needed to be able to connect the board to Energia tool on their own laptops and to be able to communicate serially with the same. For this, various settings were shown in detail and ample amount of time was spend in troubleshooting with each participant group. The day then proceeded with a simple program of connectivity checking and blinking LED's as per user's wish and combining onboard LED's to make different shades and colours. The remainder of the day was taken up to explain the Wi-Fi interfacing of the module and its details.

Day 3 began with continuing the Wi-Fi module and setting up a small home-lab to setup a local client-server application which will then be interfacing and in turn be controlled by the ARM module. The day went on with adding progressive layers of controls and setup on the client-server model.

Day 4 took the progress of day to the next level, by adding various sensors and modules to the mix. Participants had to interface temperature sensor to the module and display the measured temperature on the Web interface. Also, the temperature had to be either measured continuously or whenever the user requested it via the web interface. This was then taken ahead by interfacing stepper motor, DC motor to the module, which would simulate the operation of the fan and would be turned on at the predetermined speed for the various temperatures set and defined in the list, which is already set by the user in the server for timely action to be taken as needed.

Day 5 was an amalgamation of all the things learned and some advanced examples and hands on session were undertaken. They included connecting our ARM module to a live web server and configuring and using the module in tandem with multiple sources. The STTP was concluded with a vote of thanks and certificate distribution. Mr. Rohit then provided GIT with a complimentary ARM Module, which could then be used by the participants and the institute for further experimentation and various project work.



Participants in attendance during Inaugural Function



Welcome of Mr. Rohit Prajapati by Dr H N Shah (Principal)



Session by Prof. Chintan Patel



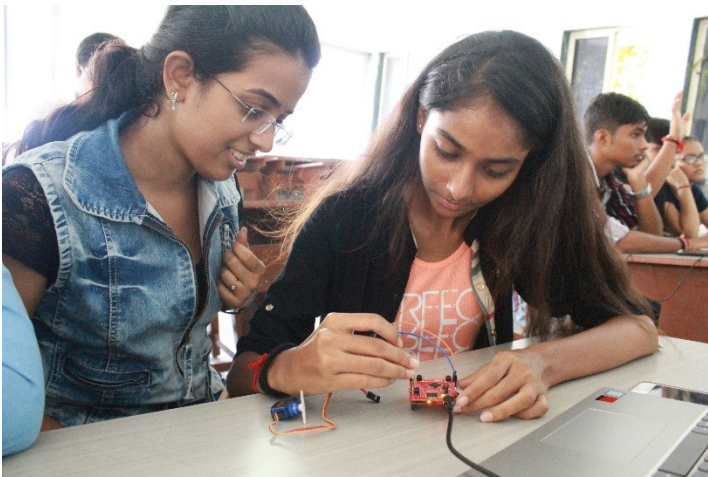
Session by Prof. Hardik H Bhatt



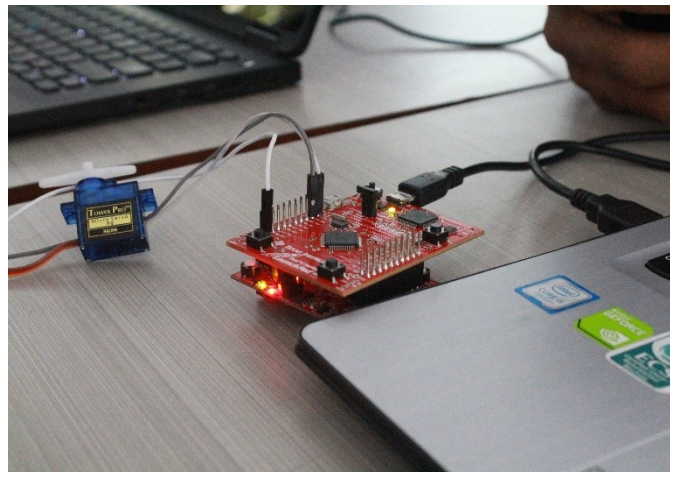
QA Session in progress



Participants engrossed in sessions



Hands on Sessions



Hardware in progress



Hardware in progress



Hardware in progress



Group Photo with Participants



GANDHINAGAR INSTITUTE OF TECHNOLOGY

(Affiliated to Gujarat Technological University)

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Gujarat Council on Science and Technology (GUJCOST)

Electronics & Communication Engineering Department

presents

5 days STTP on Internet of Things (IOT) using ARM Cortex M4

from 19th to 23rd August, 2019

in association with

DigiToad Technologies, Bengaluru

STTP Banner