BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

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AIM: INTEGRATION AND CONTROL OF EMBEDDED ELECTRICAL SYSTEM WITH LAB VIEW SOFTWARE IN SET LAB, EEE-BIET (11-16th March,2019) FOR GENERATING INNOVATIVE IDEAS USING "HANDS ON ENGINNERING"

BIET, EEE Department has established a System Engineering and Technology Lab (SET) to facilitate the work on Control System, Embedded System with associated electronics. A suitable configuration was worked out in collaboration with NI-R&D Centre, Bangalore with Dr. S. K. Chaudhuri and his team, in the end of the year 2016. The finalized configuration was demonstrated in the National Conference conducted by EEE Dept., BIET in March 24th - 26th 2017. The equipment was demonstrated in the workshop in working condition by NI senior persons and Dr.S.K. Chaudhuri in presence of delegates like Dr. V. K. Saraswat, NITI AAYOG, permanent member along with Dr. Satish Reddy, Scientific Advisor, DRDO and many other top level Scientist, Industrialist and Academicians. Senior Directors of BIET were also present during the demonstration. Two standalone systems in Windows 10 and Ubuntu environment with i3 PC platform and associated IO's and software were installed in set lab in the end of 2018

In 2019 a Short Term Training Program- **STTP-2K19** has been worked out in **SET LAB of EEE Dept**. in consultation with **NBA coordinator**. In this direction, **Director R&D** has taken initiative to have a full scale STTP with faculties involved in SET LAB (09 members) as well as few other faculty members (10) and students (12) of **EEE** for this programme. And also some of **ECE** Faculty (06) and students (03); **CSE** Dept. Faculty (02) and students (02) and **other college participants** (06) attended for **"Integration and Control of Embedded Electrical System with Lab View Software". This "HANDS ON ENGINNERING" programme** will be useful for the participants (**total:50 members**) **Academic, Development and Research work leading to innovative solutions. This will also help us to get projects from R&D institutes and organizations which demands thorough Testing, Verification and Validation. Following objectives were met in this programme:**

1. NI System, MyRio Embedded Platform with full IOs and sensors along with an Inverted Pendulum for Embedded Control System Testing Verification and Validation is functional with LABVIEW SOFTWARE.

2. Robotic Platform with full IOs and sensors is also functional with LABVIEW SOFTWARE for diving ROBOT in various trajectory profiles.

3. DATA Acquisition System (MyDAQ) is also functional for collecting various data with number of sensors for necessary analysis and design with LABVIEW SOFTWARE and MyRIO embedded state of the art platform.

4. All Control System Tools were used for time response, frequency response, bode plot etc. with various P, PI, PID Controllers for both hardware plant (Inverted Pendulum etc.) as well as Software Model in Real Time.

5. All the necessary object and executable codes are available with SETLAB members and source code with necessary authentication will be available with Dr. SKC. This will facilitate to change control system design with necessary changes for Embedded Software. Further, the plant code will also be transferred to SETLAB as promised by NI System.

6. A perpetual license for LABVIEW etc. is given to SETLAB for two systems.

OVERVIEW OF THE SETUP AND SUB-SYSTEMS

(Robotics kit)

(My Rio Platform)

(Inverted Pendulum)

(My DAQ)

Dr.S.K.Chaudhuri
Distinguished Prof-EEE
R&D Director, BIET
Organizing Chairman
STTP 2K 19