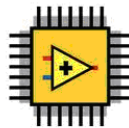**Vellore Institute of Technology**
(Deemed to be University under section 3 of UGC Act, 1956)

Value Added Program on

Real Time Embedded Application Development using LabVIEW

Commences from October 2019

Duration-30 hrs

Organized by

TIFAC - CORE in AUTOMOTIVE INFOTRONICS
(Sponsored by Department of Science and Technology, Govt. of India)

Co - ordinators

Dr. K. Ganesan, Director, TIFAC CORE & Senior Professor, SITE
Mr. R. Silambarasan, Development Engineer, TIFAC CORE

TIFAC-CORE IN AUTOMOTIVE INFOTRONICS @VIT

- ➢ The centre is conducting need based training programs on cutting edge technologies for students, faculties and industry participants.
- ➢ Offering consultancy services for the industries and carrying out research works through the research grants received from funding agencies.
- ➢ The Centre has so far conducted 358 Training programs
- ➢ The centre has completed nearly 26 consultancy projects with many leading Automotive, Biomedical, Telecom and consumer electronics industries.
- ➢ The centre has filed 24 patents (includes US patents).

Objective

- ➢ The purpose of the proposed program is to gain knowledge and hands-on experience in Model Based Design using LabVIEW focus on Real Time Applications. The training program addresses how the hardware and software modules interface with Sensors to acquire real world signals, to analyze them and present them in an intelligent manner.
- ➢ Today, Model Based Design has reached mainstream acceptance and is used in thousands of applications in industries from automotive, to consumer electronics
- ➢ LabVIEW is a powerful graphical development environment for signal acquisition, measurement analysis, data logging and data presentation, giving the flexibility in programming. It is an Enabling industry leading software tool

General Requirements

- ➢ Students pursuing B. E / B. Tech / M. E / M.Tech degree / MS (SE) in any engineering discipline may apply for this Real time Embedded Application Development using LabVIEW Training Program.

Topics Covered

Introduction to Model Based design (NI LabVIEW)
- o Introduction to LabVIEW
- o Programming fundamentals
- o Exploring LabVIEW
- o Front panel & Block diagram

Modular Programming
- o Creating and using Sub VIs
- o Debugging VIs

Loops and Structures
- o Structural Programming
- o For loop, While loop
- o Case Structures
- o Sequence Programming -
- o Flat Sequence,
- o Stacked Sequence
- o Formula and Math script Node

Arrays, Graph and Clusters
- o Array Types and its Functions
- o Cluster and its Functions
- o Multiplot Graphs and Charts

Strings, Charts and File I/O
- o String and its Functions
- o File input and output function
- o Data logging application
- o Error handling techniques

Data Management Techniques
- o Multiple loop design
- o Using variables
- o Local, Global
- o Shared Variable
- o Race condition

Controlling the User Interface
- o Property Node & Invoke Node
- o Control Reference
- o Programming Architectures

Creating and distributing application
- o project management preparing and building stand alone executables/ applications

Data acquisition
- o Hardware Introduction
- o NI cDAQ, C series Modules
- o MAX Configuration
- o Data Acquisition
- o Increasing Measurement quality
- o Analog Input
- o Scanning Multiple Analog Input
- o Analog Output
- o Digital Input and Output
- o Signal Express

Communication Protocols
- o Serial /Parallel Communication
- o Transmission Control Protocol
- o User Datagram Protocol
- o Data Socket

Wireless Communication Interfacing
- o Bluetooth
- o GPS/GSM/RFID Interfacing

Embedded Module for ARM & Arduino Microcontroller

Sensors & Signal Conditioning
Relays and Actuators
Types of Motors
DC Motor/ Stepper & Servo Motors
Drivers and Isolators
Transistor and Mosfet based Drivers
H – Bridge (Dual Direction Control)
Opto Couplers and Opto Isolators

Introduction to LabVIEW Robotics
Robotics Module Exploration
Line Follower
Collision Avoidance
Pick and Place Robot
Remote Operated Robot

Introduction to myRIO FPGA Programming

Target Participants include:

- Students of any Discipline
- Research Scholars / Faculty
- Industry Participants

Course fees and duration

- **Rs. 4000/-** (for Students)
- **Rs. 10,000/-** (for Faculty and Research Scholars)
- **Rs. 15,000/-** (for Industry Participants)
- Saturday & Sunday from 9.00 am to 6.00 pm
- Course material includes program contents in soft copy.
- Training Certificate will be issued.

Payment through DD drawn in favor of "Vellore Institute of Technology", Payable at Vellore.

Registration charges include Hand-outs. The number of participants is limited to **20** based on first come first serve.

Venue:

Room No.: 701, Technology Tower
7th Floor, VIT

Date / Time:

Saturdays & Sundays   09.00 – 18.00 Hours
(Date will be informed)

Registration confirmation through mail / phone is compulsory before arriving at VIT.

Format for Registration Confirmation

Value Added Program on

Real Time Embedded Application Development using LabVIEW

Name: --

Designation: --

Organization: ---

Address: --

Phone: ------------------------Mobile--

Fax: --------------------------E-mail: ---

DD Details: ---

Signature of the Participant

For Further Details Please Contact:

Mr. R. Silambarasan
Development Engineer
9952150511/04162202383
E-mail: silambarasan.r@vit.ac.in