

TECHNOLOGY LEARNING CENTER

..Finishing School for Engineer's

Workshop on Digital Signal Processing:

This Workshop prepares you to develop, G-programming, Digital Signal Processing and Digital Image Processing applications using Lab VIEW.

It is to develop a complete working set of digital signal processing notions from the ground up. DSP is arguably at the heart of the “digital revolution” that, in the space of just a few decades, has enabled unprecedented levels of interpersonal communication and of information availability along with image processing.

In the class, starting from the basic definitions of a discrete-time signal, we will work our way through Fourier analysis, filter design, sampling, interpolation and quantization to build a DSP toolset complete enough to analyze a practical communication system in detail. And also image processing and two-dimensional (2D) Fourier analysis. Filtering, compression and JPEG compression standard.

Hands-on examples and demonstration will be routinely used to close the gap between theory and practice.



info@tlcindia.org

www.tlcindia.org



+91-9581100283/284

TECHNOLOGY LEARNING CENTER

..Finishing School for Engineer's

Workshop Schedule

DAY 1

Session 1

- Lab VIEW Environment
- Front Panel
- Block Diagram
- Basic programming Lab VIEW
- Dataflow Programming
- Lab VIEW Help and Manuals
- Arithmetic operations
- Boolean operations
- Debugging a VI
- Sub Vis
- Icon and Connector Pane
- Using Sub Vis
- Creating a Sub VI
- While Loop



info@tlcindia.org

www.tlcindia.org



+91-9581100283/284

TECHNOLOGY LEARNING CENTER

..Finishing School for Engineer's

- For Loop
- Accessing Previous Loop Data
- **Activity:** Solving Mind Game

Session 2

- Case structure
- Case structures with Boolean
- Case structures with number of cases
- Introduction to Arrays
- Auto Indexing Arrays
- Array Functions
- Polymorphism
- Strings and its functions
- Introduction to Clusters
- Cluster Functions
- Error Clusters
- Display message VI
- **Activity:** Developing traffic light signalling systems



TECHNOLOGY LEARNING CENTER

..Finishing School for Engineer's

DAY 2

Session 3

- Waveform Charts
- Waveform and XY Graphs
- Intensity Graphs
- Decision making with the Select function
- Formula Nodes
- About file I/O operations
- How to use the high-level File I/O Vis
- How to use the low-level File I/O Vis
- How to format text files for use in spreadsheets
- SIGNAL PROCESSING module
- Sine wave generation
- Saw tooth & Triangular wave generation
- Addition of noise to the signals



TECHNOLOGY LEARNING CENTER

..Finishing School for Engineer's

Session 4

- IMAGE PROCESSING module
- Acquiring the image
- Reading image data using IMAQ function
- Removal of noise from image
- HAR Wavelets
- IMAQ practical analysis report
- IMAQ quantifying
- Filtering the image
- Extracting wavelet bands
- Detecting texture defects
- Image comparisons
- **Activity:** Project - "What Could Have Seen"



TECHNOLOGY LEARNING CENTER

..Finishing School for Engineer's

Take away for the Participant:

- Learn & Interact with renowned Industry Experts
- Become comfortable with the LABVIEW environment and data flow execution
- Skill Set to develop Projects based on DSP & DIP

Benefits of the participants

- **Certificate of Participation** to all Participants from Technology Learning Center
- **Free Softcopy of workshop content**
- Technology Learning Center summer Training Redemption Coupon

Our Requirement for the program:

- Minimum of 50 teams for conducting the workshop
- One Computer CD-ROM drive for each team or students are requested to get their laptop preferably with Windows OS.
- LCD projector and microphone PA system.
- Seminar hall or computer lab for conducting the workshop.

Workshop Duration:

- 2 Days [7 Hours/Day]

Pre-requisites:

The modules are designed in order to cater the basics of Robotics and coding however following pre-requisites will be an added advantage.

- Basic knowledge of signals and systems.
- Basic signaling techniques.

