Image Processing Using MATLAB

MATLAB (matrix laboratory) is a multi-paradigm numerical computing environment and fourth-generation programming language. MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation.

Using MATLAB, a student can analyze data, develop algorithms, and create models and applications. The language, tools and built-in math functions provide to explore multiple approaches and reaches to solution faster than with spreadsheets or traditional programming languages. MATLAB can be used for a range of applications including signal processing and communications, image and video processing, control systems, test and measurement, computational finance, and computational biology.

Topics to be covered in Workshop

Introduction to MatLab

What is MATLAB

The dominance of MATLAB over other languages

Power of Matrix computations

The application of MATLAB in various fields of engineering

MATLAB Environment

Arithmetic Functions in MATLAB

Matrixes and Vectors

Creating Matrixes and Vectors

Matrix Operation

Array Operation

Indexing Matrix

Adding Elements to Vector or Matrix

Various Flow Control used in MATLAB

2D & 3D graphical Plotting

Introduction to Image Processing

What is Image Data

Image Processing Toolbox

Importing Image

How to build a matrix image

Image Display

Image Operations

Image Conversion

Image Arithmetic

Adding Images

Subtracting Images

Multiplying Images

Dividing Images

Spatial Transformation

Resizing Images

Rotating Images

Cropping Images

Image Filtration

What is Image Restoration

Noise and Images

Noise Models

Noise removal using spatial domain filtering

Periodic noise

Noise removal using frequency domain filtering

Morphological Image Processing

Mathematic Morphology

Z2 and Z3

Basic set theory

Logic Operations

Structuring Element

How to describe Structuring Element

Basic Morphological Operations

Erosion

Dilation

Combining Erosion and Dilation

Filtering Application

Introduction to Graphical User Interface

Application and Demo\'s

Duration: The duration of this workshop will be two consecutive days, with 6-7 hours session each day in a total of 12-14 hours.

Eligibility: It\'s a basic level workshop so there are no prerequisites. Anyone interested, can join this workshop.

Fee: Rs. 1200/-(inclusive of all Taxes) per participant.