

Eye Robotics

Objective: This workshop is designed to provide an insight view in the field of eye-robotics to the students. All the concepts will be explained in detail with the Help of Theory and with Specially Designed Animations which would help the students to visualize things before actually practically working on it. This workshop will provide college students a base to Machine vision and Image Processing. They will learn the Automation technology and get better understanding and grip on its application. Students will be developing their own models by their own hands. These projects focus on the application and use of technology rather than their internal working so that a person can grasp the concepts well.

Session 1: Introduction to Computer vision

The journey into vision robotics will start from basic discussion on vision sensors and different cameras available. We will explore the application of vision in robotics and Mechatronic systems.

Session 2: Digital Image Processing in MATLAB

Basics of MATLAB, Image Acquisition and Image Processing toolboxes.

Session 3: Image Acquisition and Processing

The understanding for Pixels, color spaces, vector indexing and matrix indexing will be developed in this module.

Session 4: Image Manipulation in MATLAB

Adjusting image intensity, Image histogram equalization, arithmetic functions to enhance images, Threshold, Edge Detection, Template matching, Distinguishing colors, Shape Detection, frequency domain filtering and convolution.

Session 5: Parallel Port Programming & Machine Control

Robots that will be covered in the workshop are:

1. Ball following Robot using matlab.

2. Line following Robot using sensors.