MAEER's MAHARASHTRA INSTITUTE OF TECHNOLOGY, PUNE

MIT TEXEPHYR '14 tX

CONQUERING HORIZONS

DEPARTMENT OF MECHANICAL ENGINEERING

Presents

2–Days Workshop on

EyeBOTics

"Preparing NExT generation"

INTRODUCTION

"India's best course to learn Image Processing MATLAB" Combination of Mechanical Designing-Electronics Control-Programming Intelligence.

EyeBOTics course presents the theory and practice of digital image processing with MatLab.

Numerous examples and practical hands-on exercises are included in the course. One major topic of image processing is covered in every lecture, typically consists of a discussion of the basic theoretical concepts and examples illustrating practical imaging problems. Lectures will provide a practical learning experience.

FEATURES OF WORKSHOP:

- Takeaway EyeBOTics Robotic kit worth 5500/- to a team of 5 students.
- Certificate of participation will be given to each participant.
- Discount voucher of 500 to each student for online purchase of microcontroller
- learning kits.
- Lifetime membership account on www.thinnkware.com to avail all discounts in future.

WORKSHOP DETAILS:

Introduction to Computer vision:
1. Discussion on vision sensors
2. Cameras available.
3. Application of vision in robotics and mechatronic systems.

Digital Image Processing in Matlab:
1. Basics of Matlab
2. Image Acquisition
3. Image Processing toolboxes.
4. Creating , Resizing Images
5. Multi frame images to movie and vice versa
6. Spatial transformation
7. Sample program needs to be discussed
8. Data Structured based Image Processing
9. Image types in MATLAB
10. Conversion of images from one format to another
11. Image arithmetic
12. Measuring image properties as pixel value, distance etc.

Image Acquisition and Processing
1. Data structure of image acquired.
2. Pixels, colour spaces, vector indexing and matrix indexing.

Image Manipulation in MATLAB
1. Adjusting image intensity.
2. Image histogram equalization, using arithmetic functions to enhance images.
3. Thresholding, Edge Detection, Template matching, distinguishing colours, Shape Detection.
4. Frequency domain filtering and convolution.

Integrating image processing code real-time as Embedded System.
1. Introduction to AVR Microcontrollers
2. Concepts of DDRx, PINx & PORTx Registers
3. Different types of Motors.
4. Intelligence in robots with Micro-controller.

5. Use of macros to make programming easier for complex interfacings
6. Use of USB/Serial port programmer.
7. Use of FT232 Card for USB 2 Serial Converter
8. Using AVR Dude Burner Software.
9. Working with compilers (WinAVR and Ponyprog).

Robots that will be covered on this day include
1. Ball Following Robot
2. Line Following Robot
3. Object tracking Robot
4. Innovative ideas will be discussed with the students in the workshop.

Course Duration:
The workshop will be of 2 days

Takeaway EyeBOTics kit content:
- AVR Development Board – 1 Pc.
- AVR USB Programmer - 1 Pc.
- FT232 USB to serial Converter
- MechanzO-Senior Robotic platform (including 2-motors, Metal Chassis strips, 2-wheels,
- Gears-Small & Big)- 1 Pc.
- USB Web Camera with high pixels- 1 Pc.
- Screws, Nuts, Bolts (different sizes) – 10 each
- Battery holder-1 & 1.5 V Batteries-6
- Mechanical Toolkit (including screw driver, Wire Stripper etc.)- 1 Pc each
- Plastic Box- 1 Pc.

COURSE FEE:

The fee for the workshop is Rs. 1500/- each student with takeaway kit in a team of 5 students.

Single entry is also allowed for Rs. 1500/- and team of 5 members can be chosen on the spot by combining any of the 5 single participants. kit and bot will be shared in a team.

Decision of the organiser will be final in random selection of the team members.

CONTACT DETAILS:

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