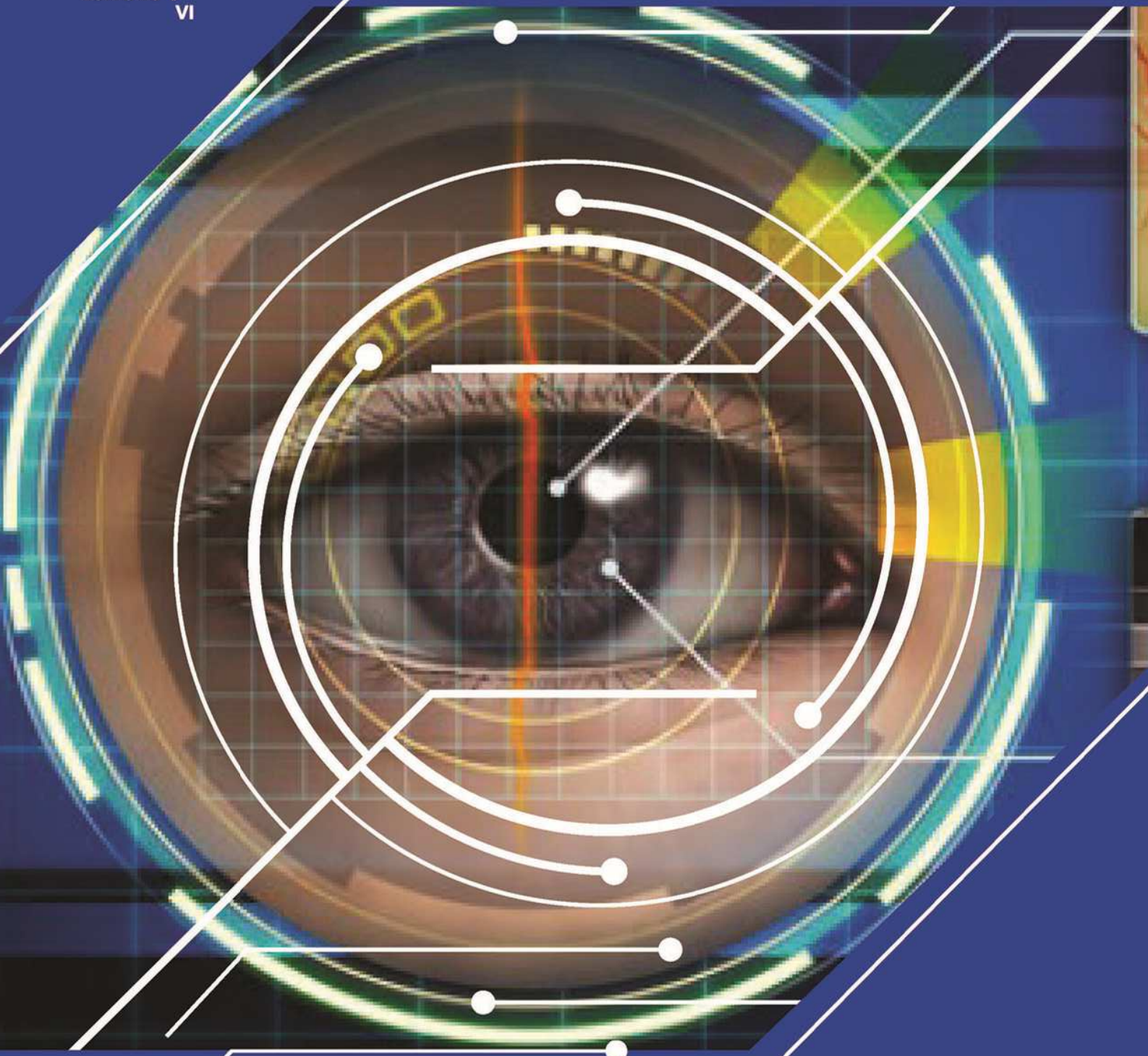
VISHWAKARMA INSTITUTES

A CERTIFICATE COURSE IN COMPUTER VISION

COURSE CODE: 14006 | COURSE CONTENT



CONTACT PERSON

Vishwakarma Learning Labs
Vishwakarma Institute of Technology, Pune
(An Autonomous Institute Affiliated to Savitribai Phule Pune University)
666, Upper Indiranagar, Bibwewadi Pune, Maharashtra 411037

Dr. Vijay Gaikwad
Email: vijay.gaikwad@vit.edu
Mobile::9545456608

Prof. Milind Rane
Email: milind.rane@vit.edu
Mobile: 9545456645

VISHWAKARMA INSTITUTES VI

CONTENTS

THEORY CONTENT

- Basics of Image Processing :
  What is image processing, Image types, Image Capturing
- Image Pre-processing Techniques:
  Smoothing, Background subtraction, Contrast Enhance ment, Point Operators, Neighborhood Operators, Image Pyramids, Median filter, Morphological Operations, Geometric Primitives and transformation, Segmentation, ROI selection
- Feature Detection:
  Points, Patches, Edges, Lines, HOG, Haar-like, Line detection using Hough transform
- Feature extraction:
  Thresholding, Blob detection, Template matching, Edgelets, Edge linking, FLANN.
- Object Classifiers:
  Neural Network, Fuzzy Logic,SVM, K-means
- Motion Estimation and Tracking
  Spline based motion, Layered Motion, Optical Flow, Kalman filter
- Computer Vision Case Studies, Applications and Hardware Platforms - Blackfin Processor BF609, BF 548; TI - TDA2x TDA3x, NVIDIA – TK1/TX1

LABORATORY CONTENT:

- Introduction to Python and OpenCV
- OpenCV Core Functionalities & Libraries
- Basic implementations with OpenCV like loading, displaying and saving an image
- Drawing lines, rectangles and circles
- Image Transformations –Translation, Rotation, Flipping, Resizing, Cropping
- Image Processing I – Image Arithmetic, Bitwise Operations, Masking, Splitting and Merging, Color Spaces
- Image Processing II – Contrast Enhancement, Linear and Non-linear Filtering, Smoothing and Blurring
- Gradients and Edge Detection
- Contours
- Object Detection / Classification
- Object Tracking
- Use of Hardware Platform BF609 and BF548, Raspberry Pi for Computer Vision
- Project 1
- Project 2

ADMISSION PROCESS

Please Visit our website **www.vitvll.in** for online application form and payment.

- Fees: Rs. 7,000/-
  (Rupees Seven Thousand Only) **Service tax extra**

ELIGIBILITY CRITERIA

Target audience/ student

- Third year and final year students from Computer, Electronics, E&TC, IT and Instrumentation Engineering / Diploma.
- M.Tech. and Ph.D. students,
- Engineering Faculty / Diploma Faculty

OBJECTIVE OF COURSE

"To develop and enhance expertise in Vision Computing to benefit the students/faculty/researchers and industry professionals to solve real-world problems."

HOW THE COURSE IS USEFUL

- **Student will be competent / expert to work in the core Computer Vision and Image Processing related Projects and Industries.**

COURSE SCHEDULE
Last Date of Admission : 7th January 2017
Course Duration : 60 Hrs
Course Dates: : 7th Jan – 12th Mar 2017

BATCH SCHEDULE
Total number of theory hours :24
Total number of Lab hours :36
Total number of hours/week :07

VENUE
Department of Electronics Engineering,
Vishwakarma Institute of Technology, Pune
DAYS AND TIMING OF THE COURSE
Saturday: 2 p.m.-5 p.m. & Sunday: 11 a.m. -3 p.m.