

# **ELECTIVE IV**

## **Computer Vision**

### **Unit 1:**

Overview, computer imaging systems, lenses, Image formation and sensing, Image analysis, preprocessing and Binary image analysis.

### **Unit 2:**

Edge detection, Edge detection performance, Hough transform, corner detection.

### **Unit 3:**

Segmentation, Morphological filtering, Fourier transform.

### **Unit 4:**

Feature extraction, shape, histogram, color, spectral, texture, using CVIP tools, Feature analysis, feature vectors, distance /similarity measures, data pre- processing.

### **Unit 5:**

Pattern Analysis: Clustering: K-Means, K-Medoids, Mixture of Gaussians Classification: Discriminant Function, Supervised, Un-supervised, Semi- supervised. Classifiers: Bayes, KNN, ANN models; Dimensionality Reduction: PCA, LDA, ICA, and Non- parametric methods. Recent trends in Activity Recognition, computational photography, Biometrics