

Digital Image Processing
Theory L/T (Hours per week): 4/0, Credit: 4

MODULE-I

Digital Image Fundamentals, Image Transforms: Fourier, Hadamard, Walsh, Discrete cosine and Hotelling Transforms; Image Enhancement: Histogram modification, Histogram equalisation, Smoothing, Filtering, Sharpening, Homomorphic filtering. ;

MODULE-II

Image restoration, Segmentation: Pixel classification, Bi-level thresholding, Multi-level thresholding, P-tile method, Adaptive thresholding, Spectral & spatial classification, Edge detection, Hough transform, Region growing.

MODULE-III

Matching and Registration: Image modeling, Stereo mapping, Landmark matching, Rectification in geometric transformations, Match measurement, Matching of binary pattern, Distortion tolerant matching; Digital geometry and its applications: Neighborhood, Path, Connectedness, Holes and Surroundness, Borders, Distances, Medial Axis Transform (MAT), Shrinking and Expanding, Thinning.

MODULE-IV

Introduction to Mathematical morphology and its application, Morphological Operations, Dilation, Erosion, Opening, Closing, Smoothing, Extraction of connected components, Thinning.

TEXT BOOKS:

1. R.C. Gonzalez, R.E. Woods, Digital Image Processing, Pearson Prentice Hall, 2007.
2. B. Chanda, D.D. Majumder, Digital Image Processing and Analysis, Prentice Hall, 2007.

REFERENCE BOOKS:

1. W.K. Pratt, Digital Image Processing (Fourth Edition), John Wiley & Sons, Inc., 2007
2. A.K. Jain, Fundamentals of Digital Image Processing, Prentice Hall, 1988.