

# DIGITAL IMAGE PROCESSING

## Unit 1

Introduction, Image processing system: Image process , digitizer, display & recording devices

Digital image Fundamentals: Image model, relationship between pixels imaging geometry.

## Unit 2

Manipulation on images, image transformation: Introduction to fast fourier transformation, walsh transformation, hadmard transformation, hotelling transformation, hough transformation

Image Enhancement: Spatial domain method, frequency domain method, histogram, modification.

Image smoothing : Neighbourhood averaging, median filtering, low pass filters average of multiple images.

Image sharpening by differentiation technique high pass filtering.

## Unit 3

Image Restoration:

Degradation model for continuous function, effect of diagnalization on the degradation models, algebraic approach to restoration. East mean square filter, interactive restoration, gray level interpolation.

## Unit 4

Image Encoding & segmentation:

Encoding: Mapping, quantize, coder.

Segmentation: Detection of discontinuation by point detection, line detection edge detection.

Edge linking & boundary detection: Local analysis , global by Hough transform & global by graph theoretic techniques.

Thresholding: Definitation, global thresholding

Filtering : Median, gradient.

## Unit 5

Simple method of representation

Signatures, boundary segments, skeleton of a region.

Polynomial approximation.