

Unit 3: Image Restoration and Reconstruction

5

Ch 5: Image Restoration and Reconstruction

- A Model of the Image Degradation / Restoration Process
- Noise Models
- Restoration in the Presence of Noise Only- Spatial Filtering
- Periodic Noise Reduction by Frequency Domain Filtering
 - Bandreject Filters
 - Bandpass Filters
 - Notch Filters
- Estimating the Degradation Function
- Inverse Filtering
- Minimum Mean Square Error(Wiener) Filtering
- Geometric Mean Filter

Unit 4: Morphological Image Processing

5

Ch 6: Morphological Image Processing

- Preliminaries
- Erosion and Dilation
- Opening and Closing
- The Hit-or-Miss Transformation
- Some Basic Morphological Algorithms
 - Boundary Extraction
 - Hole Filling
 - Extraction of Connected Components
 - Convex Hull
 - Thinning
 - Thickening

BOS Members:

Dr. Reena Bharathi (Subject Expert)

Dr. Manisha Bharambe (Subject Expert)

Dr. Jyoti Yadav (Subject Expert)

Mr Vishal Salke (Industry Expert)

Ms Amruta Nambiar (Alumni)

Prof. Ashwini Kulkarni (Chairman and Internal faculty)

Prof. Smita Borkar (Internal Faculty)



 (Handwritten signatures of BOS members: Reena Bharathi, Manisha Bharambe, Jyoti Yadav, Vishal Salke, Amruta Nambiar, Ashwini Kulkarni, and Smita Borkar)



Unit 5: Image Segmentation with Representation and Description	12
Ch 7: Image Segmentation	7
<ul style="list-style-type: none"> • Fundamentals • Point, Line, and Edge Detection <ul style="list-style-type: none"> ➤ Background ➤ Detection of Isolated Points ➤ Line Detection ➤ Edge Models ➤ Basic Edge Detection ➤ Edge Linking and Boundary Detection • Thresholding <ul style="list-style-type: none"> ➤ Foundation ➤ Basic Global Thresholding ➤ Optimum Global Thresholding Using Otsu's Method ➤ Using Image Smoothing to Improve Global Thresholding ➤ Using Edges to Improve Global Thresholding • Region-Based Segmentation 	
Ch 8: Representation and Description	5
<ul style="list-style-type: none"> • Image Representation and Description • Representation <ul style="list-style-type: none"> ➤ Boundary (Border) Following ➤ Chain Codes ➤ Polygonal Approximations Using Minimum-Perimeter Polygons ➤ Other Polygonal Approximation Approaches ➤ Signatures 	
*Contact hours – 12 hours	

Reference Books:

1. Gonzalez, R. C. and Woods, R. E. [2002/2008], *Digital Image Processing*, 3rd ed., Prentice Hall
2. Sonka, M., Hlavac, V., Boyle, R. [1999]. *Image Processing, Analysis and Machine Vision (2nd edition)*, PWS Publishing, or (3rd edition) Thompson Engineering, 2007

BOS Members:

Dr. Reena Bharathi (Subject Expert)

Dr. Manisha Bharambe (Subject Expert)

Dr. Jyoti Yadav (Subject Expert)

Mr Vishal Salke (Industry Expert)

Ms Amruta Nambiar (Alumni)

Prof. Ashwini Kulkarni (Chairman and Internal faculty)

Prof. Smita Borkar (Internal Faculty)








