

Assignment No. 2

Module 3

① what are the advantages and disadvantages of edge based segmentation?

② Explain split and merge segmentation technique.

③ Define edge in an image. Detect edge in the following image using strength (magnitude) and direction of gradient. Use Prewitt operator.

$$\text{Image} = \begin{bmatrix} 0 & 30 & 60 \\ 5 & 32 & 62 \\ 10 & 38 & 64 \end{bmatrix}$$

④ Using the second derivative, develop a Laplacian mask for image sharpening.

⑤ what are the three stages of the Canny edge detector? Briefly explain each phase.

⑥ Short note on classification of edges.

⑦ Briefly explain the following terms.

- i) Gradient operator.
- ii) Edge Detection using first-order Derivatives.
- iii) Roberts kernel
- iv) Prewitt kernel.
- v) Sobel kernel
- vi) Second-Derivative Method of Detecting Edges in an image.

⑧ Give two applications of image-segmentation techniques. & also explain image segmentation with examples.

module 4

- ① State Properties of fourier Transform & Prove Convolution Property of fourier Transform.
- ② State and Prove translation Property of DFT.
- ③ Define two-dimensional DFT. Discuss the following Properties:
 - i) Symmetric, unitary
 - ii) Periodic extensions.
 - iii) conjugate ~~state~~ symmetry.
- ④ Define discrete cosine transform and its inverse transformation. Discuss any three Properties of DCT.
- ⑤ Explain Separability of unitary transform and basic images.
- ⑥ List few Properties of unitary transforms.
- ⑦ Prove that Hartard transform is a fast transform.
- ⑧ Write Four Properties of Hadamard transform.
- ⑨ Derive the relation between DCT and DFT.