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Question Paper Code: 99454

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2022

Open elective

Civil Engineering

19UEC954– FUNDAMENTALS OF DIGITAL IMAGE PROCESSING

(Common to CSE, EEE, Mechanical, IT, Chemical, Agriculture and Biomedical Engineering)

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 1 = 5 Marks)

- MRI in imaging stands for CO1- U
 - Magnetic Resonance Imaging.
 - Magnetic Resistance Imaging.
 - Magnetic Resonance Intensity
 - Major Resonance Imaging
- The procedure done on a digital image to alter the values of its individual pixels known as _____ CO3- U
 - Geometric Spatial Transformation
 - Single Pixel Operation
 - Image Registration
 - Neighbour hood Operations
- For line detection we use _____ mask CO4- U
 - gaussian
 - laplacian
 - ideal
 - butterworth
- Mean filter reduce noise using CO5- U
 - sharpening
 - blurring
 - restoration
 - acquisition
- To make the SE rectangular array approach that is used is called CO6- U
 - Padding
 - Logic diagram
 - Set theory
 - map

PART – B (5 x 3= 15 Marks)

- List the steps involved in frequency domain filtering CO2-App
- Give any two properties of DCT CO2- U
- Compare threshold region based image segmentation techniques. CO4- U

9. Explain singular value decomposition CO5- U
10. What is importance of morphological operations in image processing CO6- U

PART – C (5 x 16= 80Marks)

11. (a) Explain various stages of Digital Image Processing with a neat diagram CO1- U (16)
- Or
- (b) Explain the basic relationship between pixels CO2- U (16)
12. (a) Explain histogram and histogram equalization with neat diagrams in detail. CO3- U (16)
- Or
- (b) Explain the concept of image smoothing in frequency domain CO3- U (16)
13. (a) Explain image degradation model /restoration process in detail. CO4- U (16)
- Or
- (b) Describe the various geometric transformations used for image restoration CO4- U (16)
14. (a) Discuss in detail about the threshold selection based on boundary characteristics and explain the techniques that uses thresholds in image segmentation CO5- U (16)
- Or
- (b) Explain region based segmentation using region splitting and merging with an example. CO5- U (16)
15. (a) What do you understand by dilation and erosion in morphological image processing? Explain with example. Also give one suitable application for each. CO6- U (16)
- Or
- (b) Explain thinning and skeletons in image morphological processing with neat diagrams CO6- U (16)