Dr. A.P.J. Abdul Kalam Technical University (AKTU) · B.Tech Theory Examination

Image Processing

KCS-062 · 2023

Time: 3 Hours **Max. Marks: 100**

Attempt all Sections.
If require any missing data; then choose suitably.

SECTION A

1(a)	Define the advantages of Wiener filter.	2	U3
1(b)	What is the Digital Image Processing?	2	U1
1(c)	Explain the term PSF.	2	U3
1(d)	Define erosion and dilation.	2	U4
1(e)	What do you mean by degradation?	2	U3
1(f)	What do you mean by reflectance?	2	U1
1(g)	Compare the inverse filter with Wiener filter.	2	U3
1(h)	Define the use of Boundary Extraction.	2	U5
1(i)	Differentiate between image enhancement and restoration.	2	U2
1(j)	Define harmonic mean filter.	2	U3

SECTION B

2(a)	What do you mean by image processing? Explain the steps of image processing with the help of block diagram.	10	U1
2(b)	Explain piecewise linear transformations of image enhancement with suitable example.	10	U2
2(c)	Explain Band pass Filter Technique for noise reduction.	10	U3
2(d)	Explain watershed segmentation algorithm in detail.	10	U4
2(e)	Discuss the need for data compression. Also explain run length encoding algorithm in detail.	10	U5

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SECTION C

3(a)	Explain low level, mid level and high level image processing. Also explain sampling and quantization process.	10	U1
3(b)	Differentiate Correlation and Convolution with 1-D function and a filter example.	10	U2
4(a)	Explain the process of filtering in frequency domain. Discuss low pass and high pass frequency domain filters.	10	U2
4(b)	Write notes on: i. Bit plane slicing ii. Homomorphic Filter	10	U2
5(a)	What is Image Restoration? Draw and explain the basic block diagram of the restoration process.	10	U3
5(b)	Explain: 1. Median filter, and 2. Midpoint filter.	10	U3
6(a)	Explain edge detection and edge linking. Also differentiate between edge detection and edge linking.	10	U4
6(b)	Explain Image Segmentation and related fundamental conditions.	10	U4
7(a)	Differentiate between JPEG and MPEG standard in detail.	10	U5
7(b)	Differentiate between image compression and recognition briefly.	10	U5

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