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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E.

Branch: ES – Cluster Elective

Course Code: 19EC6CE1CV

Course: Computer Vision

Semester: VI

Duration: 3 hrs.

Max Marks: 100

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1	a) What is K Means Algorithm? Mention the Criteria of objective functions with different proximity measures in detail. Also list out the merits and demerits of the same.	10
	b) Define a classifier. Mention the mistakes of a two class classifiers? Give the importance of risk function in classification strategy. Suggest a solution to minimize the risk of a two class classifier and multi class classifiers.	10

UNIT - II

2	a) Prove that the auto correlation surface is a factor dependent on Image gradient. Bring out the significance of addressing the Aperture problem during feature detection and explain in detail.	10
	b) “Most Feature detectors can lead to uneven distribution of feature points” Suggest a suitable technique to mitigate the problem in detail.	10

OR

3	a) What is edge detection? Describe the different techniques involved in edge detection.	08
	b) How can we make image descriptors more invariant preserving discriminability between different Patches? Explain the different descriptors in detail.	07
	c) “Even though some design discriminators are rotationally invariant they have poor discriminability”. Suggest a suitable method to overcome the drawback	05

UNIT - III

4	a) Explain the following: a) Active Contours, b) Elastic Nets, c) Deformable Surfaces, d) Fourier Descriptors.	08
	b) Identify and explain an algorithm which employs factored sampling using particle filtering. List atleast four real time applications for the same.	08
	c) What is the importance of Splines and Shape Priors?	04

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - IV

5 a) "It is required to obtain image sections through a sample without performing physical sectioning". Suggest and explain a suitable approach to accomplish the same. **06**

b) What are the different lattice configuration arrangements in atoms? Comment on voxel arrangements in cubic array. **08**

c) Suggest and explain any method to enhance the visibility of structures in 3D processing. **06**

OR

6 a) What is the importance of resolution reduction? Suggest a suitable technique to reduce the size of storage requirements. **06**

b) Explain ray tracing? What are the variables available for ray tracing? **06**

c) Define Stereo matching. Describe the different approaches for matching stereo pairs? What are the drawbacks of stereo pairs? **08**

UNIT - V

7 a) "As an increasing number of paperless works, a digital signature can be the safeguard of valuable data"-Justify the statement highlighting the importance of secure digital signature. **06**

b) What is Augmented Reality? Brief the characteristics of the AR environment. **06**

c) With the help of a neat block diagram explain the working of biometric systems also explain the different authentication methods and the attributes of biometric data. **08**
