CBCS SCHEME

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BAI515A

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Computer Vision

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What is Compute Vision? Why is vision so difficult? Discuss the real – world examples of computer vision.	10	L1	CO1
	b.	Explain the behavior of pinhole camera under different effects using a clear illustration to show the real–world example.	10	L2	CO1
		OR			
Q.2	a.	Explain the phong shading model.	8	L2	CO1
	b.	Explain the Di-chromatic reflectance model.	5	L2	CO1
	c.	What is meant by image filtering? Clearly discuss types of filter.	7	L1	CO1
		Module – 2			
Q.3	a.	Differentiate between a linear spatial filter and a non-linear spatial filter. Explain why bilateral filtering is quite show compared to regular separable filtering.	10	L2	CO2
	b.	Explain the binary image processing. Obtain the distance transform D(i, j) of a binary image B(i, j).	10	L2	CO2
		OR			
Q.4	a.	Explain the derivation of Discrete Fourier Transform (DFT) form the continuous transform of the sampled function.	10	L2	CO2
	b.	What are the geometric transformation? Explain the forward warping algorithm for transforming an image.	10	L1	CO3
		Module – 3			
Q.5	a.	Give the probability density functions for Gaussion noise model and Rayleigh noise models.	10	L1	CO3
	b.	Discuss the noise reduction capabilities of the following spatial filters : i) Arithmetic mean filter ii) Geometric mean filter.	10	L1	CO3
		OR			
Q.6	a.	Explain the image gradient and its properties.	10	L2	CO3
	b.	Explain the following gradient operators : i) Roberts cross –gradient operators ii) Sobel operator iii) Prewitt operator iv) Laplacian operator.	10	L2	CO3

		Module – 4			
Q.7	**a.**	Define the pseudocolor processing of digital images. Explain the graphical interpretation of the intensity slicing technique.	**10**	**L2**	**CO4**
	b.	Discuss the procedure for conversion from RGB color model to HIS color model.	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Illustrate how full-color images are handled for a variety of image processing tasks.	**10**	**L2**	**CO4**
	b.	Explain the color image smoothing and sharpening procedure.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Explain how morphological operations are performed between images and structuring elements.	**10**	**L2**	**CO5**
	b.	Write short notes on the following : i) Erosin ii) Dialation.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain the procedures in the "boundary following" algorithm that traces the boundary in binary image.	**10**	**L2**	**CO5**
	b.	What is Pattern Classification? Explain the minimum distance classifier.	**10**	**L2**	**CO5**

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