Reg. No.

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024
Sixth-Semester
AD18604 – COMPUTER VISION AND APPLICATIONS
(Artificial Intelligence and Data Science)
(Regulation 2018/2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Apply the image transformation and enhancement techniques.	3
CO 2	Use suitable feature extraction and segmentation techniques.	3
CO 3	Recognize the geometric relations	4
CO 4	Select suitable optical flow for motion field and methods for 3D reconstruction.	3
CO 5	Create 3D objects	5

PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

		CO	RBT LEVEL
1.	Illustrate the properties of Fourier transform.	1	2
2.	Discuss the various thresholding techniques.	1	2
3.	Interpret Hough Transform.	2	2
4.	Illustrate Split and Merge algorithm.	2	2
5.	Compare Left hand and Right hand camera subsystem.	3	3
6.	Summarize the term Stereopsis.	3	3
7.	Write the notation of optical flow.	4	2
8.	Infer the motion field of a rigid object.	4	2
9.	Relate the term Invariants with suitable example.	5	4
10.	Summarize 3D object modelling with an example.	5	4

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Apply the following 2-Dimensional transformations using matrix representations and provide suitable diagrams to illustrate each transformation. *Translation *Rotation *Scaling	**(14)**	1	3
	(OR)			
(b)	Apply the various linear filtering techniques with an example.	**(14)**	1	3
12. (a)	Analyze and apply the Harris corner detection algorithm.	**(14)**	2	3
	(OR)			
(b)	Explain in detail about the split and merge algorithm.	**(14)**	2	3
13. (a)	Elucidate the features of camera models in detail.	**(14)**	3	3
	(OR)			
(b)	Elaborate left and right epipolar Geometry in detail.	**(14)**	3	3
14. (a)	Derive the brightness and smoothing consistency terms in Horn and Schunck algorithm.	**(14)**	4	3
	(OR)			
(b)	Examine the principles of Shape from Shading (SFS) and Photometric Stereo differ in reconstructing the three-dimensional shape of an object.	**(14)**	4	3
15. (a)	Examine real-world applications where Convolutional Neural Networks (CNNs) have demonstrated significant success in visual recognition.	**(14)**	5	4
	(OR)			
(b)	Compare and evaluate the performance of Adaboost and Random Decision Forests in the context of pattern analysis.	**(14)**	5	4

PART- C (1 x 10 = 10 Marks)
(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Implement the performance of Canny, Robert, and Sobel edge detection algorithms and provide examples of scenarios where each algorithm may be preferred based on the nature of the image and the requirements of the application.	(10)	2	5

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