

SRM Institute of Science and Technology College of Engineering and Technology

DEPARTMENT OF ECE

SRM Nagar, Kattankulathur - 603203, Chengalpattu District, Tamilnadu

Academic Year: 2023-2024 (ODD)

Test: CLAT-3

Course Code & Title: 18ECE3401 - Machine Perception with Cognition

Implement the concept of image processing and machine

vision in real time applications

Year & Sem: 1V/VII

Date: 11-10-2023 Duration: 100 minutes Max. Marks: 50

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Course Articulation Matrix: PROGRAM 18ECSJ01J - Applied Programming PROGRAM OUTCOMES STUDENT OUTCOMES COURSE OUTCOMES 11 12 0 Understand the fundamentals of image Processing, camera ŧ 2 3 and color models Analyze the binary shapes, region and boundary- based 2 3 2 image modeling Illustrate the various filter banks, shape and textures for 3 2 3 image synthesis Express the objects, frames based on template relations 4 Apply the concept of 2D and 3D face recognition 8 3

3 2

Part – A (10 x 1 = 10 marks) Answer all the Questions							
Q. No	Questions	Marks	BL	CO	PO		
1	What is the difference between Convolution and Correlation? a) Image is pre-rotated by 180 degree for Correlation b) Image is pre-rotated by 180 degree for Convolution c) Image is pre-rotated by 90 degree for Correlation d) Image is pre-rotated by 90 degree for Convolution	1	1	4	1		
2	Image-template matching is invariant to changes in a) black and white b) brightness and contrast c) gray levels d) RGB colour	1	1	4	1		
3	Template matching performed through Fourier transform uses the duality between a) Convolution and multiplication b) Multiplication and addition c) Multiplication and revering d) Convolution and forwarding	1	1	4	1		
4	The interest points are calculated based on a) Image neighborhood b) Image corners c) Foreground d) Background	1	1	4	1		
5	Where does the Hidden Markov Model is used? a) Speech recognition b) Understanding of real world c) Medical treatment d) Filters	1	2	4	1		
6	Normal gait cycle occurs during a) running b) dancing c) walking d) hopping	1	1	5	3		
7	The process of matching objects to templates through their boundaries is termed as a) Size filtering b) Pruning c) Chamfer matching d) Particle filtering	1	1	5	3		
8	Identify which one is the cause of intra-class variation a) Illumination variation b) Face Changes c) Orientation variation d) Shape variation	1	2	5	3		
9	is not a behavioral type biometric. a) Retina scan b) Voice scan c) Signature Scan d) Thumb print	1	1	5	3		

10	Choose the technique which is used to extract the background of an	11	11	15	11
	image				
	a) Background subtraction b) Chamfer marching			1	
	c) Correspondence search d) Foreground subtraction				
	PART 0				
	Section B1 (2 x 4 = 8 marks)				
	Answer ANY 2 Questions			-	
11	How the Objects are found using Voting on Relations between Templates?	4	2	4	
12	What are the methods involved in Background Subtraction?	4	1	4	1
13	With relevant example, brief about Hidden Markov Model.	4	2	4	1
	Section B2 (2 x 4 = 8 Marks) Answer ANY 2 Questions				
14	What are the Challenges in face detection and recognition techniques?	4	2	5	3
15	Mention the role of Particle Filters in image Processing.	4	1	5	3
16	How the Chamfer Matching helps to detect object in images?	4	2	5	3
	PART C (2 x 12 = 24 marks)				
17 (n)	Explain how the line is detected in a given image based on Hough Transform	12	3	4	1
	OR				
17 (b)	Explain how objects are detected through template matching.	12	3	4	1
18 (a)	Explain in detail the complete cycle of analysis of Human Gait with relevant diagram.	12	3	5	3
	OR				
18 (b)	Describe how the views of images are combined from multiple cameras located at different distance and orientation.	12	3	5	3
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Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



