SRM Institute of Science and Technology
College of Engineering and Technology
School of Computing

SET A

DEPARTMENT OF COMPUTATIONAL INTELLIGENCE
SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2023-2024 (ODD)

Test: CLAT-1 **Date:11-08-2023**
Course Code & Title: 18CSE390T Computer vision **Duration:** 60 Minutes
Year & Sem: III & 5th sem **Max. Marks:** 25 Marks

Part - A
(1 x 5 = 5 Marks)

Instructions: Answer all

Q. No	Question	Marks	BL	CO	PO	*PI Code
1	Which of the following process helps in Image enhancement? a) Digital Image Processing b) Analog Image Processing c) Both a and b d) None of the above	1	1	1	1	1.3.1
2	Nyquist rate is a) inverse of sampling frequency b) proposanal to sampling frequency c)same of sampling frequency d) double the time of sampling frequency	1	2	1	1	1.3.1
3	Autonomous navigation is a) low level processing b) mid level processing c) high level processing d) both b and c	1	1	1	1	1.3.1
4	Eight Parameter transform makes a) smaller 3D motion b) Preservation of straight lines c) does not preserve straight lines d) Interpolation happens	1	2	1	1	1.3.1
5	Histogram Equalization is mainly used for _____ a) Image enhancement b) Blurring c) Contrast adjustment d) None of the Mentioned	1	1	1	1	1.3.1

	Part – B **(Answer any three)** **(2 x 5 = 10 Marks)**					
1	Illustrate the manual process of computer vision	5	2	1	1	1.3.1
2	Classify Perspective and parallel projections with example.	5	2	1	1	1.3.1
3	How 2D transformation is done? Give examples.	5	2	1	1	1.3.1

Part C
(Answer any one)
(1 x 10 = 10 Marks)

1	Outline the concept of Histogram equalization with any image matrix with pixel intensity ranges from 0 to 7.	10	3	1	2	2.2.2
2	Elucidate the concept of Sine and Cosine waves and provide a rationale for its inherent properties.	10	2	1	2	2.3.1

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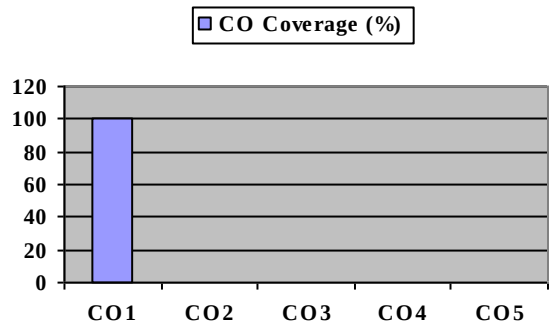
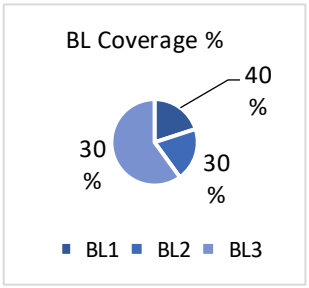
Course Outcome (CO) and Bloom's level (BL) Coverage in Questions





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SET B

DEPARTMENT OF COMPUTATIONAL INTELLIGENCE

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2023-2024 (ODD)

Test: CLAT-1 **Date:**11-08-2023
Course Code & Title: 18CSE390T Computer vision **Duration:** 60 Minutes
Year & Sem: III & 5th sem **Max. Marks:** 25 Marks

Part - A
(5 x 1 = 5 Marks)

Instructions: Answer all

Q. No	Question	Marks	BL	CO	PO	*PI Code
1	Which of the following camera parameters should be explicitly known to project a 3D mesh whose vertices are expressed in the camera coordinate system onto an image plane? a. Camera coordinate center in world coordinates b. Camera intrinsic including focal distance and principal point c. Camera rotation angle d. Camera Translation e. The matrix to find the epipolar line in another camera view	1	1	CO-1	1	1.3.1
2	In 3D, we map points from 3-space to the projection plane(PP) along projector emanating from the _____ a. Projection b. Center of Projection c. World Coordinates system d. None	1	2	CO-1	1	1.3.1
3	Which of the following is a challenge when dealing with computer vision problems? a. Variations due to geometric changes (like pose, scale etc) b. Variations due to photometric factors (like illumination, appearance etc) c. Image occlusion d. All of the options mentioned	1	2	CO-1	1	1.3.1
4	Which of the following factor does not a Select the intrinsic parameters of a camera model? a. Focal length b. set of optical center c. Exposure d. Image resolution	1	3	CO-1	1	1.3.1
5	_____axis is a line from the camera center perpendicular to the image plane a. Main b. Principal c. Epipolar d. Perpendicular	1	3	CO-1	2	2.2.3

Part – B (Answer any three) (2 x 5 = 10 Marks) **Instructions: Answer ALL**						
1	Elaborate on six instances of practical computer vision and offer explanations for each.	**5**	**3**	CO-1	**1**	**1.2.1**
2	Illustrate with a real-world example for pinhole perspective and explain its behavior under various effects	**5**	**3**	CO-1	**1**	**1.2.1**
3	Elucidate the prevalent approach utilized in Object Detection, accompanied by a tangible real-world case study.	**5**	**3**	CO-1	**1**	**1.2.1**

Part – C (Answer any One) (1 x 10 = 10 Marks)						
1	Provide a comprehensive explanation of 2D transformations, accompanied by a well-organized diagram and a clear mathematical representation. (i) Translation (ii) Rotation (ii) Scaling	**10**	**3**	CO-1	**1**	**1.2.1**
2	Elaborate the following : (i) Sampling and Aliasing (ii)How does the Bidirectional Reflectance Distribution Function (BRDF) contribute to our understanding of light interaction with different materials and its implications for rendering realistic computer-generated images?	**10**	**3**	CO-1	**1**	**1.2.1**

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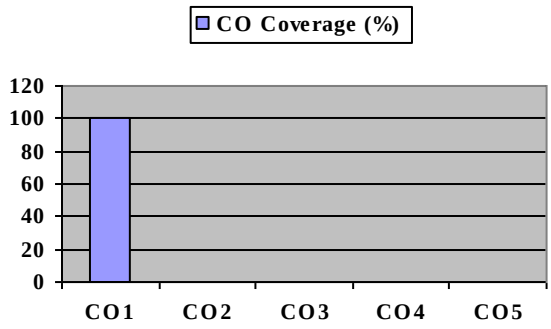

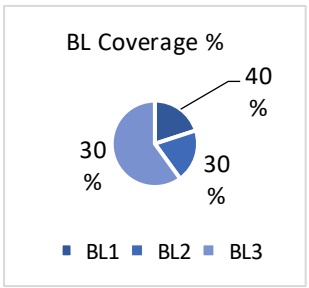

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SET C

DEPARTMENT OF COMPUTATIONAL INTELLIGENCE
SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2023-2024 (ODD)

Test: CLAT-1 **Date:11-08-2023(AN)**
Course Code & Title: 18CSE390T Computer vision **Duration:** 60 Minutes
Year & Sem: III & 5th sem **Max. Marks:** 25 Marks

Part - A
(1 x 5 = 5 Marks)

Instructions: Answer all

Q. No	Question	Marks	BL	CO	PO	*PI Code
1	Identify purpose of computer vision is to program a computer to "understand" a _____ in an image. a) Features b) Size c) Colour d) Source	1	1	1	1	1.3.1
2	Select which one of the following equation denotes homogeneous representation of 2D points? a) X=(x,y) b) X~=(x,y,z) c) X=(y,x) d) X=(x,x)	1	1	1	1	1.2.1
3	Label the equation X'=Rx+t denotes which transformations a) Only Rotation b) Only Translation c) Both Rotation and Translation d) Both Scaled Rotation and Translation	1	1	1	1	1.3.1
4	Identify how to produce an image, the scene must be illuminated with one or more_____sources. a) Image b) Sound c) Light d) Wave	1	1	1	1	1.3.1
5	Define he minimum sampling rate required to reconstruct a signal from its instantaneous samples must be_____. a) $f_s<=2f_m$ b) $f_s=2f_m$ c) $f_s>2f_m$ d) $f_s>=2f_m$	1	1	1	2	1.3.1

Part – B
(Answer any two)
(2 x 5 = 10 Marks)

1	Discover and explain the various types of projection.	5	3	1	4	1.2.1
2	Describe the importance of sampling and aliasing.	5	1	1	5	1.2.1
3	Consider a 5x5 image with integer intensities in the range between zero and seven: 0 7 3 2 3 1 1 1 6 7 7 7 2 2 0 1 1 0 5 1 0 0 6 5 2 Draw the image histogram for the above matrix.	5	3	1	4	1.2.1

Part C
(Answer any one)
(1 x 10 = 10 Marks)

1	Identify and explain the various types of 3D transformation.	10	2	1	2	1.2.1
2	Interpret the use of Pixel transforms and Color transforms with required diagram.	10	2	1	4	1.2.1

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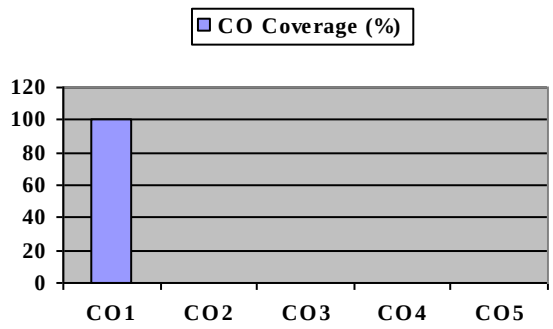

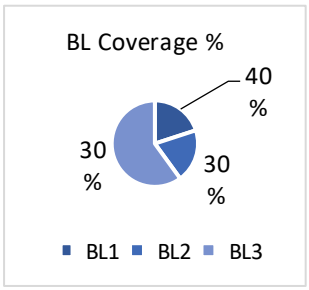

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SET D

DEPARTMENT OF COMPUTATIONAL INTELLIGENCE
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Academic Year: 2023-2024 (ODD)

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Part - A
(1 x 5 = 5 Marks)

Instructions: Answer all

Q. No	Question	Marks	BL	CO	PO	*PI Code
1	Digitization of spatial co-ordinates (x,y)is called (a)gray level quantization (b)finite sampling (c)image sampling (d)image quantization	1	1	CO1	1	1.3.1
2	The amount of white light present in a spectrum is called as _ a. intensity b. saturation c. hue d. colour	1	1	CO1	1	1.3.1
3	A translation is applied to an object by a) Repositioning it along with straight line path b) Repositioning it along with circular path c) Only b d) All of the mentioned	1	2	CO1	1	1.3.1
4	Down sampling can lead to aliasing because (a) Sampling leads to additions of low frequency noise. (b) Sampled high frequency components result in apparent low frequency components. (c) Sampling increases the frequency components in an image. (d) Sampling leads to spurious high frequency noise	1	2	CO1	1	1.3.1
5	The color model which is more relevant to a display system is the a) RGB Model b) CMY Model c) HIS Model d) YIQ Model	1	1	CO1	1	1.3.1

Part – B (Answer any two) (2 x 5 = 10 Marks)						
1	Explain adaptive histogram equalization technique.	5	1	CO1	1	1.3.1
2	Define Photometric image formation. Discuss about Light scatters when it hits a surface.	5	2	CO1	1	1.3.1
3	Explain the Bilinear interpolation.	5	1	CO1	1	1.3.1

Part C
(Answer any one)
(1 x 10 = 10 Marks)

1	Discuss about the following point operators in preprocessing transforms. ❖ Pixel transforms (4) ❖ Color transforms (4) ❖ Compositing and matting (2)	10	1	CO1	2	2.3.1
2	Explain the following Linear Filtering techniques, ●Median filtering (4) ●Band-pass and steerable filters (6)	10	2	CO1	2	2.3.1

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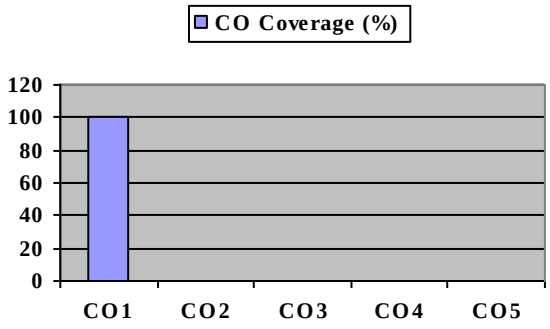

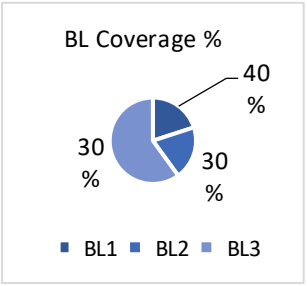

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