

(4)

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Unit-III

6. Write detailed notes on any two of the following using suitable terms, diagram and equations : $2 \times 8 = 16$
- (i) Photometric stereo
 - (ii) Volumetric Representation
 - (iii) Translational alignment
7. Explain the term surface gradient, surface normal and unit surface normal along with its equations. How is a gradient space associated with the normal space? Draw suitable diagrams to explain the concept. 16

Unit-IV

8. How is field of view related to multiple cameras? Explain the process of combining views from multiple cameras for overlapping fields of view. 16
9. What are the assumptions in human gait analysis? Explain the construction of kinematic model of human body using stick skeleton mode of the lower human body done. 16

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MCA 3rd Semester (MCA 2 year Programme)

w.e.f. 2021-22, Examination,

December-2022

COMPUTER VISION (Elective-I (i))

Paper-21MCA23DA1

Time allowed : 3 hours]

[Maximum marks : 80

Note : Students will be required to attempt five questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Compulsory Question

Attempt the following :

$8 \times 2 = 16$

1. (a) Write formula for Hamming Distance used for template matching with its notations used.
- (b) Give two reasons of using Gray Scale image instead of color images for processing.
- (c) What are problem associated with circle detector? approach ?

67104-N-P-4-Q9 (22)

[P.T.O.

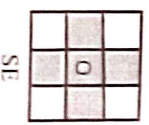
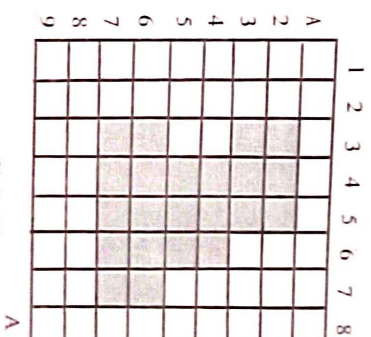
- (d) Write any two characteristics of a good feature.
- (e) How does 3D vision created? Explain.
- (f) Draw spline based motion using example of your choice.
- (g) How are Eigen faces associated with recognition?
- (h) Define particle filter. What is it used for?

Unit-1

2. (a) Write the algorithm for Adaptive thresholding. How is thresholding done if the illumination is not sufficiently uniform? Explain its types. 8
- (b) What is distance function? How is it used in analysis of shapes and regions? Explain any two distance functions taking example images of your choice. 8
3. (a) Write short notes on any two of the following: $2 \times 4 = 8$
- (i) Size filtering
- (ii) Handling occlusion
- (iii) Chain codes

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- (b) Apply the Hit-or-Miss Transform on the image A below using SE. Show answers step by step. 8



Unit-II

4. What is Hough line detection? Write the Hough Line Detection algorithm and explain the terms: Image space, parameter space and the association with point and lines with suitable diagrams and equations. 16
5. Explain the use and procedure of chord bisection method taking suitable diagrams. Also discuss about the robustness of this method. How can we overcome the speed related issue in it? Explain. 16

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