Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 50421

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fifth/Sixth Semester

Computer Science and Design

CCS 338 — COMPUTER VISION

(Common to : Computer Science and Engineering / Computer Science and Engineering (Artificial Intelligence and Machine Learning) / Computer and Communication Engineering /Electronics and Communication Engineering / Electronics and Instrumentation Engineering / Electronics and Telecommunication Engineering / Instrumentation and Control Engineering / Artificial Intelligence and Data Science / Computer Science and Business Systems / Information Technology

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. How useful is computer vision in image formation.
2. List down the most important components in computer vision.
3. Brief about patch in CV.
4. Justify how an edge differs from a line.
5. How does factorization work?
6. Illustrate about surface based representation.
7. How does computer vision use shape matching?
8. In computer vision, what is a layered depth image?
9. How does machine vision recognize categories?
10. What are the different ways that computer vision can recognize things?

PART B — (5 × 13 = 65 marks)

11. (a) Explain Fourier transforms in computer vision.

Or

(b) Give a detailed illustration of Linear filtering and global optimization.

12. (a) Explain the primary approaches of segmentation and mode finding of computer vision.

Or

(b) What are Graph cuts and energy-based methods in computer vision? Explain.

13. (a) What is 2D and 3D feature-based alignment? Provide a detailed study on formation of 2D and 3D feature-based alignment.

Or

(b) Triangulation - Discuss and show its various types and application.

14. (a) How do you measure the active range findings of a 3D reconstruction and what methods are available?

Or

(b) What method is used for volumetric representations? Illustrate with example.

15. (a) What are the different types of Image based rendering? Discuss it in detail.

Or

(b) Elaborate in detail, Instance recognition and Category recognition with an example.

PART C — (1 × 15 = 15 marks)

16. (a) Provide an intuitive explanation of how the Geometric transformations works in computer vision.

Or

(b) How do Normalized cuts useful features from non-useful features in computer vision? Justify your answer with a case study.

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