



**CHAITANYA BHARATHI
INSTITUTE OF TECHNOLOGY**
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COMMITTED TO
RESEARCH,
INNOVATION AND
EDUCATION

46
years

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

IMAGE AND VIDEO ANALYTICS(22ADE25)

ASSIGNMENT-1

PART-A

SNo	Question	CO	BTL
1	What is the difference between image analysis (or computer vision) on one side and computer graphics on the other side?	1	2
2	Describe the key properties of digital color images.	1	3
3	Explain the differences between traditional and hierarchical image data structures in the context of image analysis. How does each structure affect the computational complexity and efficiency of image processing tasks?	1	2
4	What is image segmentation? How does it help in partitioning an image into meaningful regions? Provide examples of applications where image segmentation plays a critical role	1	2
5	Implement Optical Character Recognition (OCR) for Handwritten Text	1	3
6	Given an image of a complex object (e.g., a car), discuss the process of detecting edges using the Canny edge detection method. What are the key parameters involved in this algorithm, and how do they influence the detection results? Illustrate with an example how the Canny edge detector is applied to the object image, including thresholding and gradient calculation. <u>OR</u> Demonstrate the output of the Canny edge detector using a sample image.	2	3
7	Explain the concept of scale in edge detection, especially in relation to multi-scale techniques.	2	2
8	Discuss how second derivative-based edge detection works (e.g., Laplacian of Gaussian).	2	4

9	Discuss mean filtering, Gaussian filtering, and median filtering.	2	4
10	Define image smoothing and its role in noise reduction.	2	2
11	Explain the different object detection methods used in machine learning. How do traditional methods compare to deep learning-based approaches?	3	2
12	What is Phasor Object Detection, and how does it differ from traditional object detection methods?	3	2
13	What are the key components of a deep learning framework for object detection? Describe the role of CNNs (Convolutional Neural Networks) in this process.	3	2
14	Name two common deep learning-based object detection frameworks and briefly describe their working principles.	3	2

PRACTICAL IMPLEMENTATION:PART-B

Sno	Questions	CO	BTL
1	Sample project for Color detection	1	3
2	Data structures for Image Analysis -Write a program that computes the T-pyramid of an image	1	3
3	Sample project for Image Smoothing	2	3
4	Sample project for Edge detection using Sobel ,Canny edge.	2	3
5	Object Detection with OpenCV <ul style="list-style-type: none"> • Detect simple objects like faces, eyes, or hands using OpenCV and Haar cascades. • Libraries: OpenCV, NumPy 	3	3

NOTE:1. PART A- Any 4 Questions from UNIT-I

Any 2 Questions from UNIT-II

Any 1 Question from UNIT-III, PART-A Handwritten

PART-B -All are compulsory,PART-B-Softcopy

2. Submission of soft copy assignment to be done on or before 02-03-24.
