

Task 5

1. Image Classification Project

- Objective:

Build an image classification model using traditional ML and deep learning techniques.

- Dataset Options:

MNIST Digit Dataset

CIFAR-10 Dataset

Custom Image Dataset (Minimum 3 Classes)

- Tasks:

Perform image preprocessing (resize, normalization)

Split dataset into train and test sets

Train at least 2 models (e.g., CNN and Logistic Regression)

Compare model performance

- Evaluation Metrics:

Accuracy

Confusion Matrix

Training vs Validation Accuracy Graph

2. Image Processing Mini Tasks

- Perform the following using OpenCV:

Edge Detection (Canny)

Image Thresholding

Image Augmentation (flip, rotate, brightness adjustment)

3. Mini Deployment Project (Choose One)

- Option A: Digit Recognition Web App
 - Deploy trained MNIST model using Streamlit
- Option B: Image Classifier Web Tool
 - Upload image and predict class label
- Option C: Real-time Camera Prediction
 - Use webcam to classify objects in real time

Submission Requirements

- Well-structured GitHub Repository
 - Jupyter Notebook with explanations
 - README with model comparison table
 - Screenshots of output