



## 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