School of Computer Science Engineering and Technology

Lab:2

Course-B. Tech.	**Type-** Core
Course Code- CSET301	**Course Name-** Artificial Intelligence and Machine Learning
Year- 2025	**Semester-** Odd
Date- 27/07/2025	**Batch-** 2023-2027

CO-Mapping

	CO1	CO2	CO3	CO4	CO5
Q1		√	√		√

AI/ML Lab – Image Preprocessing

Objective:

This lab aims to introduce students to fundamental image preprocessing techniques. Students will learn how to clean and prepare image data for analysis using Python tools like **OpenCV**, **NumPy**, and **matplotlib.**

Problem Statement:

Your task is to perform basic preprocessing operations on the image to make it suitable for analysis and machine learning models. You can take this image from anywhere; also, I have attached one image here.

You can upload an image on Colab by
clicking the folder icon on the left → Upload → Select an image.

Sample.jpg

Instructions:

- Upload an image to your Colab environment.
- Load and display the image.
- Convert the image from BGR to RGB format.
- Resize the image to a standard shape (e.g., 128×128 pixels).
- Convert the image to grayscale.
- Convert the grayscale image to binary using thresholding.
- Normalize the image pixel values.
- Apply basic augmentations like flipping and rotating the image.
- Apply filters to remove noise such as Gaussian or median blur.
- Flatten the image and display the new shape.

You are expected to use libraries such as OpenCV, NumPy, scikit-learn (sklearn), matplotlib, or seaborn. Make sure to include clear comments in your code to explain your approach.