**­­­­­School of Computer Science Engineering and Technology**

**Lab:2**

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| **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**

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|  | **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.**

A person with a beard and mustache

Description automatically generated **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.