School of Computer Science Engineering and Technology

Course- **BTech**
Course Code- **CSET340**

Type- **Specialization Elective**
Course Name- **Advanced Computer Vision and Video Analytics**

Year- **2026**
Date- **12-16-Jan-2026**

Semester- **EVEN**
Batch- **2023-2027 (VI Sem)**

Lab Assignment No. 1

Exp. No.	Name	CO-1	CO-2	CO-3
1.	To perform Basic Image Manipulations on different types of images and Videos	✓		

Objective: How can you implement the basic operations on images in Python using OpenCV library? Perform the provided task as follows.

Data Set: Download the Zip_Folder containing "Test_Images_lab 1" images with some colored, gray scaled and black and white images.

1. Read RGB image, extract RGB channels and plot it and show the shape and size**.** **1 Mark** **(Lena_Image.png)**
2. Convert RGB to Grey Scale image and binary image**. (Lena_image.png)** **1 Mark**
3. Extract Desired ROI and Perform Arithmetic and Logical operations**.** **7 Mark**
   - 3.1 Extract desired ROI**. (lena_Image.png)**
   - 3.2 Perform Image Addition to enhance the brightness**. (lena_Image.png)**
   - 3.3 Perform Image subtraction:
     - Motion Detection. **(filled_living_room.jpg), (Empty_living_room.jpg)**
     - Defect Detection. **(fine_plywood.jpg), (defected_plywood.jpg)**
   - 3.4 Image Multiplication:
     - Masking **(lena_Image.png)**
     - Enhance the brightness and contrast. **(lena_Image.png)**
   - 3.5 Analyze the difference between image subtraction and division. **(lena_Image.png)**
   - 3.6 Logical operation XOR: check the similarity between two images. **(Lena_Image.png)**
   - 3.7 Analyze the difference between subtraction and XOR. **(Lena_Image.png)**
4. Extract Frames or perform sampling of a video with different frame rates. **1 Mark** **(Sample_Video.MP4)**

Note:- Suggested Platform: Python: Jupyter Notebook/Visual Studio Code/Google Colab.
Mode of Delivery: Face-to-face: Instructor-led discussion and live coding demonstration. Hands-on Practice via Google Colab/VS code/Notebook.
Submission: On LMS within the prescribed time frame.