

### **Assignment 1**

1. Write the programs to use nearest neighbor, bilinear, and bicubic-based interpolation methods to increase the number of pixels in each frame of the video. You need to process the grayscale video using interpolation methods. You can convert the color video into a grayscale video using BGR2Gray. Find the sizes of videos obtained after applying the neighbor, bilinear, and bicubic-based interpolation methods. The video file is given as assignment1\_video.mp4.
2. Write the Python programs to apply power law transformation, piecewise linear transformation, gray-level slicing, bit-plane slicing, and histogram equalization in each frame of the video. You need to process the grayscale video. You can convert the color video into a grayscale video using BGR2Gray. The video file is given as assignment1\_video.mp4.
3. Write the Python programs to apply smoothing operation on each frame of the video using a 5 x 5 smoothing mask and a 9 x 9 Gaussian mask. You need to process the grayscale video. You can convert the color video into a grayscale video using BGR2Gray. The video file is given as assignment1\_video.mp4.
4. Write the Python programs to apply image sharpening operation on each frame of the video using 7 x 7 Sobel and Laplacian masks. You need to process the grayscale video. You can convert the color video into a grayscale video using BGR2Gray. The video file is given as assignment1\_video.mp4.
5. Write the Python program to apply a 2D Discrete Fourier transform on each frame of the video. Evaluate the new video containing the frames as the Fourier transform of the original video images. You need to process the grayscale video. You can convert the color video into a grayscale video using BGR2Gray. The video file is given as

assignment1\_video.mp4.