**Color Transformations:**

1. **Basic Color Conversion:**

Convert an RGB image to grayscale, HSV, LAB, CMYK and YCbCr formats. Display and analyze the differences.

1. **Component Separation:**

Write a program to extract and display the individual red, green, and blue components of an image.

1. **Color Manipulation:**

Change the intensity of a particular channel in an RGB image (e.g., increase the red intensity by 30%) and observe the effect.

1. **Pseudo Coloring:**

Apply a colormap to a grayscale image and convert it to a false-color image.

1. **Color Inversion:**

Invert the colors of an image by subtracting each pixel value from 255 for each channel.

**Geometric Transformations:**

1. **Scaling:**

Scale an image to half its original size and then double its size using bilinear and nearest-neighbor interpolation methods.

1. **Translation:**

Translate an image by a specified number of pixels along the x and y axes. Handle boundary conditions appropriately.

1. **Rotation:**

Rotate an image by 45°, 90°, and 180°. Experiment with and without clipping the edges.

1. **Affine Transformation:**

Apply a custom affine transformation matrix to perform shearing and stretching on an image.

1. **Perspective Transformation:**

Change the perspective of an image using a set of four points.

1. **Video Frame Transformation:**
   1. **Extract frames from video.**
   2. **Add text overlay to image – Some custom message on each frame**
   3. **Perform rotation on each frame followed by flip**
   4. **Change the video playback speed**
   5. **Draw some custom shaped on the video frame.**
   6. **Compute the average of all frames to create a single image.**
   7. **Save the processed frame into a video.**