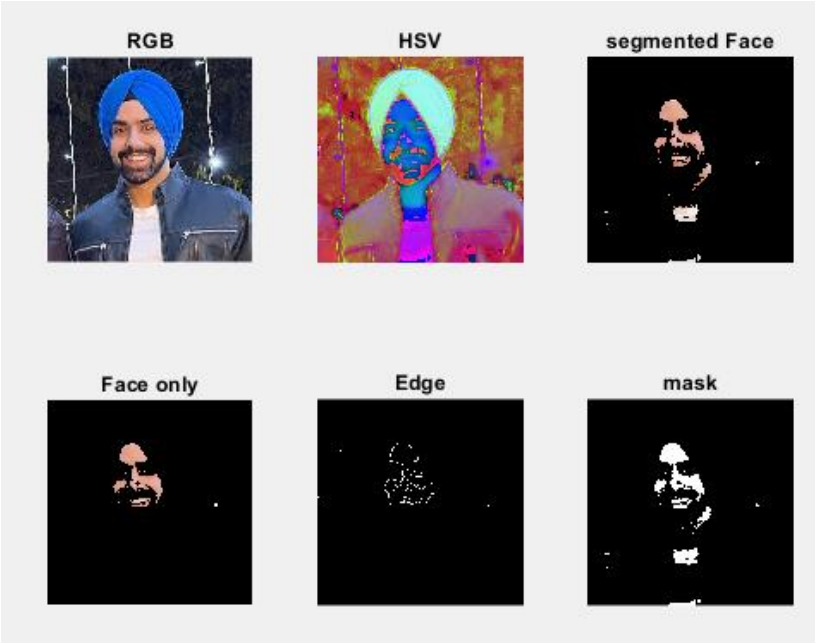
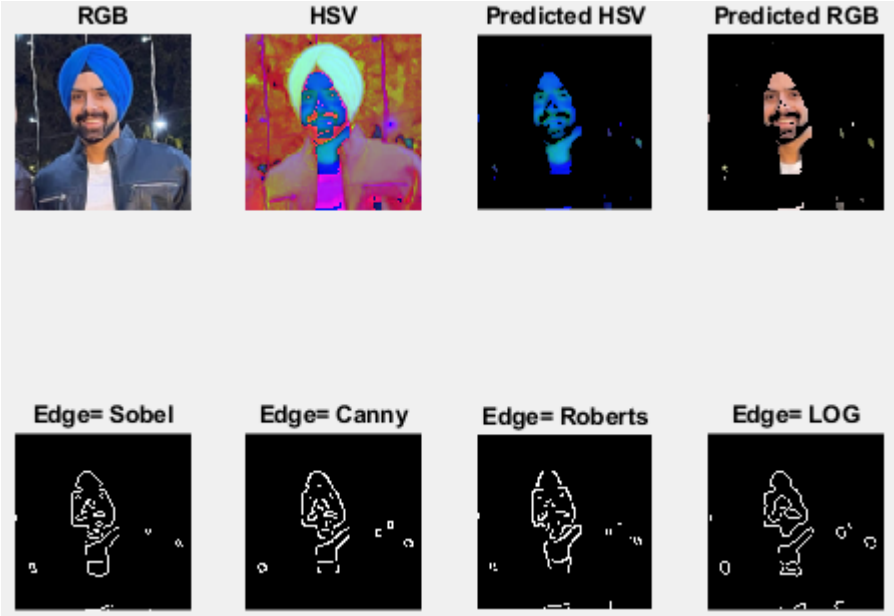
CourseWork-3 Visual Data Analysis

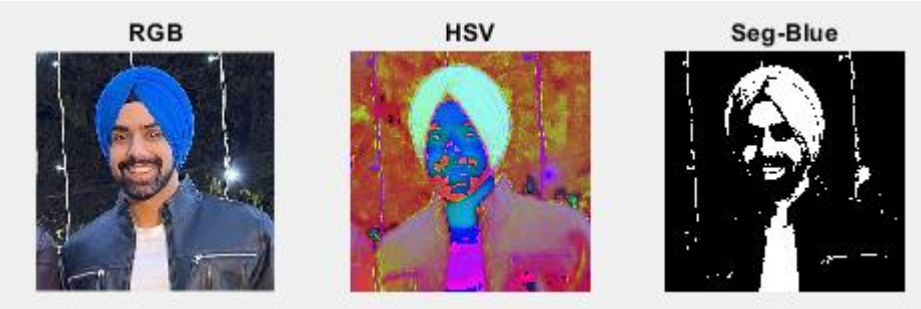
- The provided codes combine several image processing methods to carry out a variety of operations, including edge detection, segmentation, and face detection. Let's dissect each component.



- Pre-Existing Edge-Detection methods: The code segment performs edge detection on a grayscale image using various operators such as Sobel, Prewitt, Roberts, Canny, and Laplacian of Gaussian (LoG). The original image and the edges detected using each operator are displayed in separate subplots.

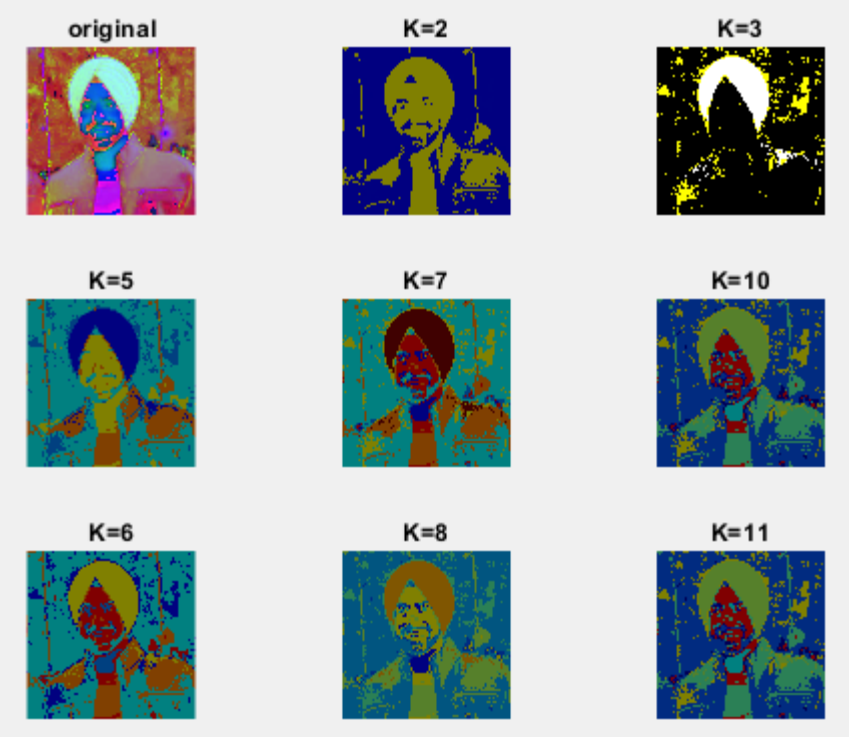


- Segmented Blue:I have performed some image processing or computer vision operations to identify regions or pixels that correspond to blue in an image. it is used to store the segmented blue regions.



- HSV - The given code segment performs color-based segmentation on an image using the HSV color space. It extracts a face region based on specified thresholds for hue, saturation, and value. The resulting face region is then displayed along with the original image, HSV image, a binary mask, and edges of the segmented face.

- K-Means Clustering: The code segment performs k-means clustering on an image in the HSV color space. It segments the image into multiple regions based on different values of k. The resulting segmented regions are displayed along with the original image and edges of the segmented region in RGB.



- Threshold: This code segment loads an image named 'Angad.jfif' and applies a thresholding operation. It sets the intensity values to 0 for pixels where the red channel value is greater than 150. The original image and the thresholded image are then displayed side by side.

- Face Segmentation: This code segment performs face segmentation on an image by applying color thresholds and brightness conditions. Pixels with red, green, and blue values within specified thresholds are considered as potential face pixels. Additionally, pixels with intensity values above a certain brightness threshold are also considered. The resulting segmented image is displayed along with the original image.

- Sig_impose: The code segment overlays a signature image onto another image, creating two versions - one with a brighter signature and one with a darker signature. The original signature image, the original image, and the resulting images with the overlaid signature are displayed.