R&D PROJECT

Hemoglobin Level Estimation from Photographic images

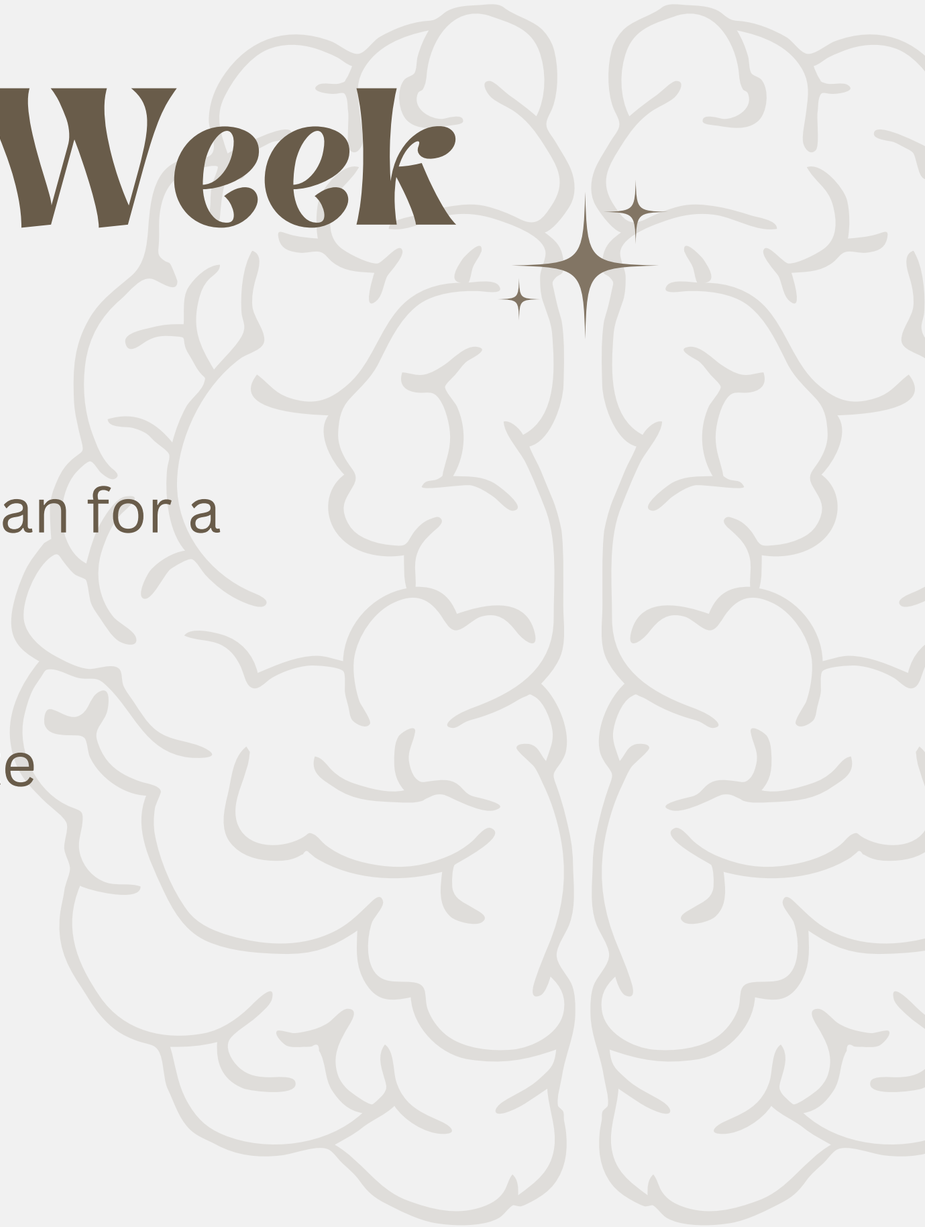
NIRANJAN VERMA
210020085

PROF. NIRMAL PUNJABI

DH 307

Insights from Last Week

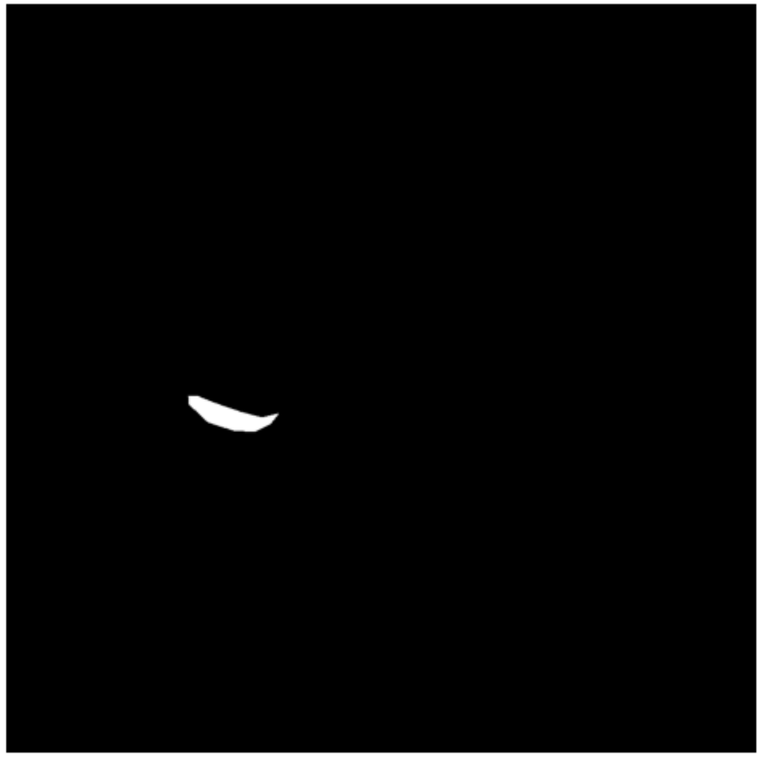
- Will receive dataset next week
- Read on what does accuracy, precision and recall mean for a segmentation model
- Read Hidden Markov Models
- Search research papers which have used color palette



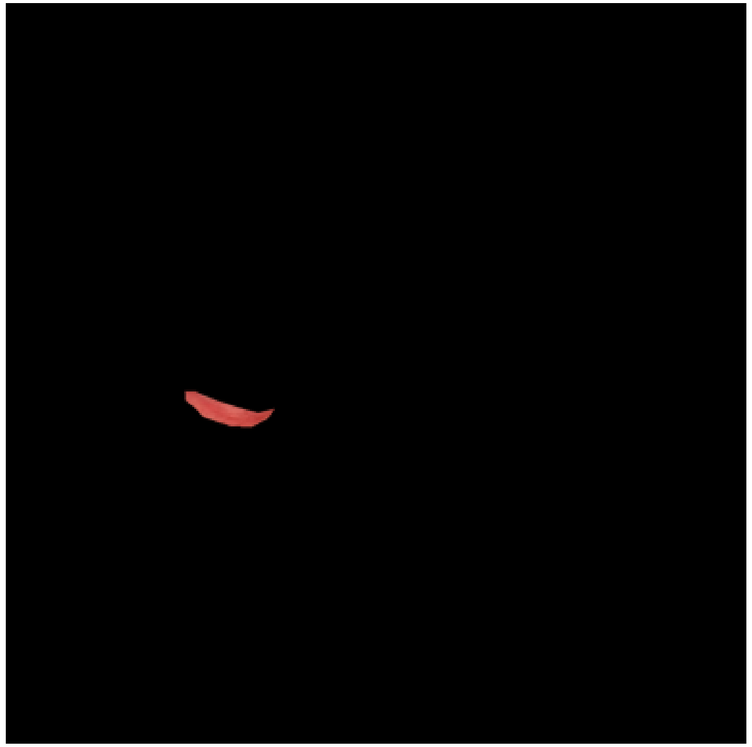
Segmented conjunctiva using the given mask

Original Image

Mask



Masked Image



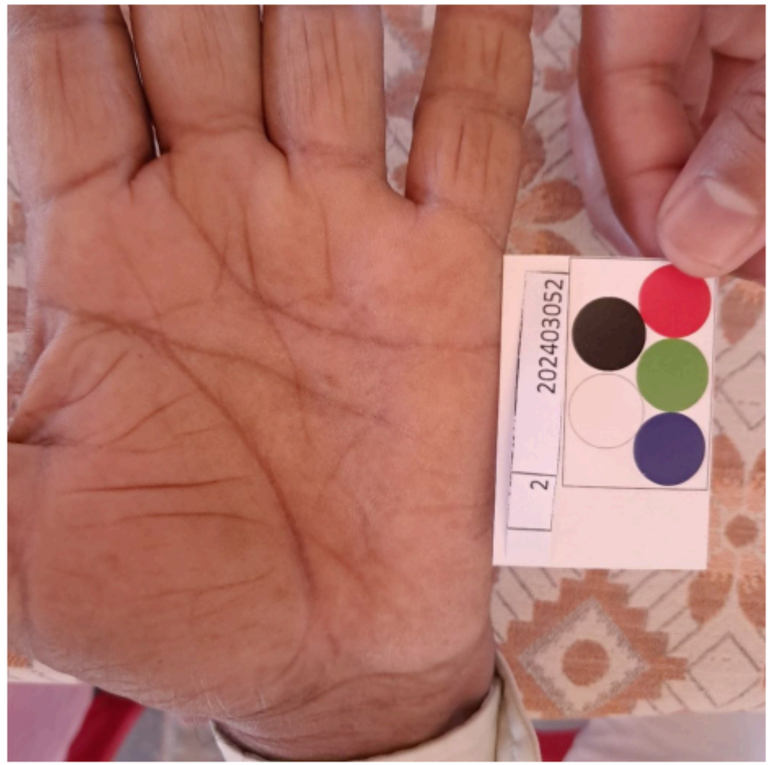
Segmented conjunctiva using the given mask

Logic Used

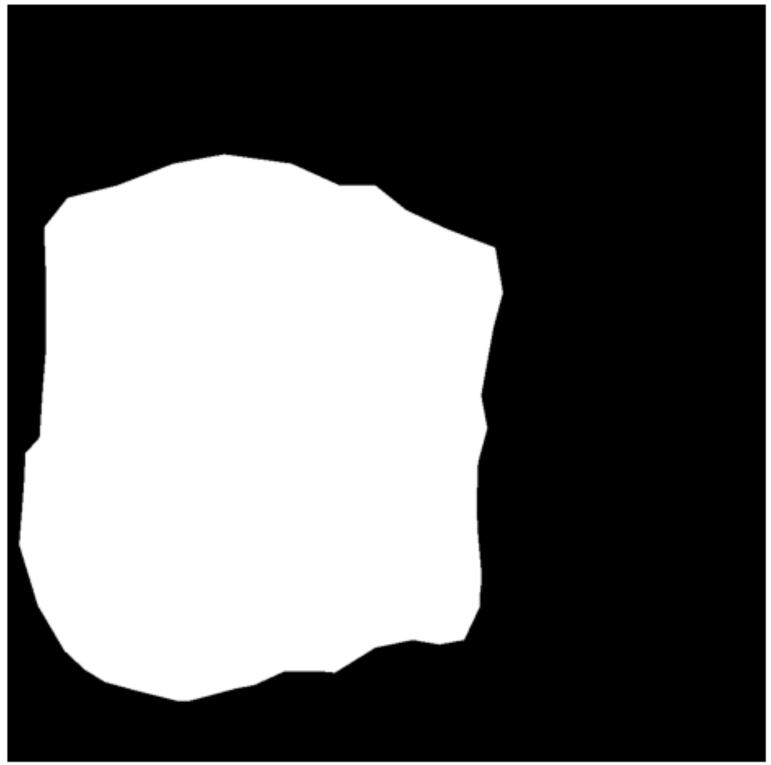
- **Image Loading**: Load the original image and mask; convert the original to RGB for visualization and the mask to grayscale for processing.
- **Binary Mask Creation**: Threshold the mask (values < 125 as True) to identify regions for modification.
- **Channel Splitting**: Split the original image into Blue, Green, and Red channels for individual manipulation.
- **Mask Application**: Set pixel values to 0 (black) in the identified mask regions for all three channels.
- **Image Reconstruction and Visualization**: Merge the modified channels, convert to RGB, and display the original, mask, and masked image side by side.

Segmented palm using the given mask

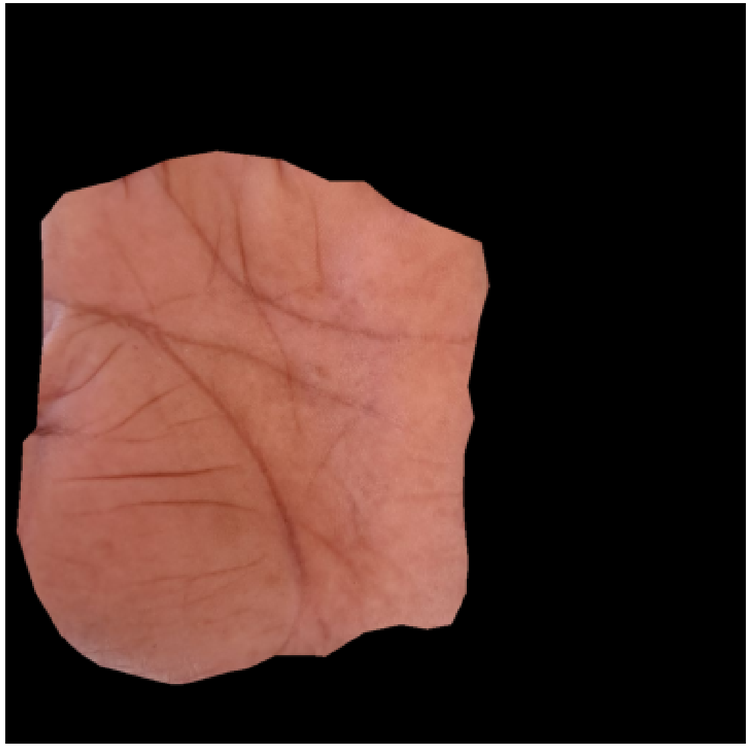
Original Image



Mask



Masked Image



Segmented palm using the given mask

Logic Used

Same logic has been used here which is used for conjunctiva extraction from the image using the segmented mask provided.

Image has been loaded and binary mask is created by thresholding the mask (values < 125 as True).

Original image has been split into 3 RGB channel and binary mask is applied on each individual channel.

The spilt image has been merged to generate the output.

Finding Color Palette

Original Image

Extracted Color Palette

Finding Color Palette

Logic Used

- **Convert to Grayscale and apply Gaussian blur :** Converted the image to grayscale for edge detection and applied gaussian blur to reduce noise
- **Edge Detection:** Used Canny edge detector to detect edges in blurred image
- **Contour Detection:** Identifies External Contour from the detected edges
- **Identify the Largest Contour:** Loops through all the contour to find the contour with maximum area which is expected to be the color palette region
- **Extract Palette Region:** Crop the palette from the extracted contour

Future Research

RECOMMENDATION FOR NEXT RESEARCH

- Make model without using the color palette

Thank you