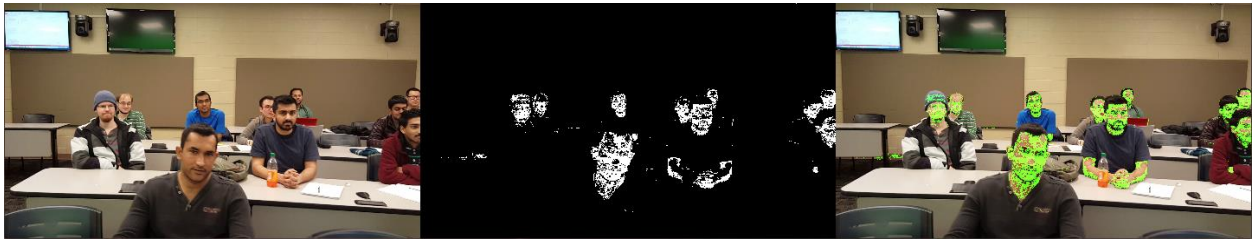


CS6001 Assignment 1: Facial region detection

Two datasets (training and testing) are uploaded to Canvas. Each consists of 12 images along with their corresponding facial regions. The facial regions are stored as rectangles in '.mat' files.

- (1). Get familiar with the starting codes to understand some basics of Matlab functions.
- (2). Based on the training dataset, learn the likelihood and prior distribution of facial/nonfacial regions using the RGB color space.
- (3). Given a test image, infer every pixel's posterior probability of being within a facial region. Generate the detected facial mask and quantitatively report your results in terms of precision and recall. The following shows one example of the detected facial mask.



- (4). Try to explore other color channels in the feature space. E.g., `rgb2hsv()` in Matlab converts RGB to Hue-Saturation-Value. You can use Hue and Saturation channels to reduce the effect of variant illuminations. You can try function `rgb2ycrcb()` as well. You can also try to combine multi-color channels into a higher dimensional feature vector for each pixel to compute the likelihood.

Upload running MATLAB codes and a written report to Canvas by the due date & time including

- a) Brief summary of what you think the project was about,
- b) Brief outline of your algorithmic approach,
- c) Pictures of intermediate and final results that convince us that the program does what you think it does.
- d) Any design decisions you had to make and your experimental observations. What do you observe about the behavior of your program when you run it? Does it seem to work the way you think it should? Play around a little with different setting to see what happens. Note, your open-ended exploration is highly valued.

We only use them in our class assignments!!!