CS 484, Fall 2018
Take-home Quiz 1

The goal of this take-home quiz is to warm up for image analysis by detecting objects of interest in personal images using thresholding.

First of all, choose a personal picture that must:

- be taken by you,
- contain an outdoor scene,
- contain at least two people with their faces clearly visible,
- contain several other objects like buildings, cars, and/or regions like sky, trees, grass, etc.
- have a size of around 1000×1000 pixels (you can resize a larger image to this size).

Experiment with thresholding to detect objects based on color information as follows:

- Examine the histograms of the color bands (you can check the Matlab code examples on the course web page).
- Threshold the image by possibly using different thresholds for individual bands and combining the results using logical operations for a single binary output.

Perform these steps for at least three different types of objects (e.g., people, trees, roads, cars, sky, etc., that you think might be identified based on color thresholding alone). The output should be a single binary image for each type of object. One of these images must contain faces (i.e., try to detect faces based on skin color). Note that you cannot use any GUI tool for thresholding or other image processing related operations, and are required to perform the operations in a programming environment, e.g., Matlab.

Submit:

- Input image.
- Resulting binary images (one image for each object type; at least three images).
- Description of the particular sequence of operations you used to obtain these results. You MUST submit a PDF file that contains both the results (e.g., images) and the description of how you obtained them. You are also expected to provide a short discussion of the results (e.g., which objects were easy and which were more difficult, what was possible and what was not, etc.).
- This take-home quiz is due by 23:59 on Wednesday, October 10th, and must be submitted using the online submission form on the course web page.
- Submit a single archive file that contains all results. Your pdf file should contain all descriptions, results (images), and discussion. The archive should contain the pdf file and the resulting images as separate files.
- Make sure that you write your name and student ID in the pdf file.