

Project 2 Report

Approach

I started with the code provided by Dr. Crystal Maung.

I modified the region of interest given to the eye detection code from the full area of the face to only the upper 60% of the face. I made this decision because eyes are only ever on the upper part of the face and the code was occasionally detecting parts of the mouth as an eye.

Through a lot of trial and error and playing with the values of `scaleFactor` and `minNeighbors` in the `cascade.detectMultiScale()` function, I determined that smaller numbers worked better to detect eyes on significantly smaller images. From this discovery, I added an if clause in the eye detection code to change the values of `scaleFactor` and `minNeighbors` given to `cascade.detectMultiScale()` depending on the size of the region of interest. The size threshold was determined through trial and error.

I experimented with the `scaleFactor` and `minNeighbors` values for the face detection but determined that the values should stay at 1.15 and 3 respectively.

For `DetectWink2.py` I added preprocessing in the form of histogram equalization and median blurring (in that order); however, I noticed in testing that median blurring caused eye detection to fail for smaller images. To combat this, I added an if clause that prevents blurring if the input image is too small. The size threshold was determined through trial and error.