Visual Scrolling Aid

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Approach

Outlined is our approach to accomplish the task undertaken

Step 1

Begin by utilizing facial detection using OpenCV for Python.

Step 2

Use wxPython's scroll feature coupled with above feature

Step 3

Refine approach and apply OpenCV and wxPython for pupil tracking and scrolling

Step 4

Further refining and GUI improvements

Face Detection using OpenCV

- XML file contains cascade of tests (Haar's Cascade) which check whether object in a moving window is a face or not
- Create an object that uses the tests in the .xml file to extract faces from images sampled from webcam feed
- Localize eyes using empirical data and Haar's Cascade.

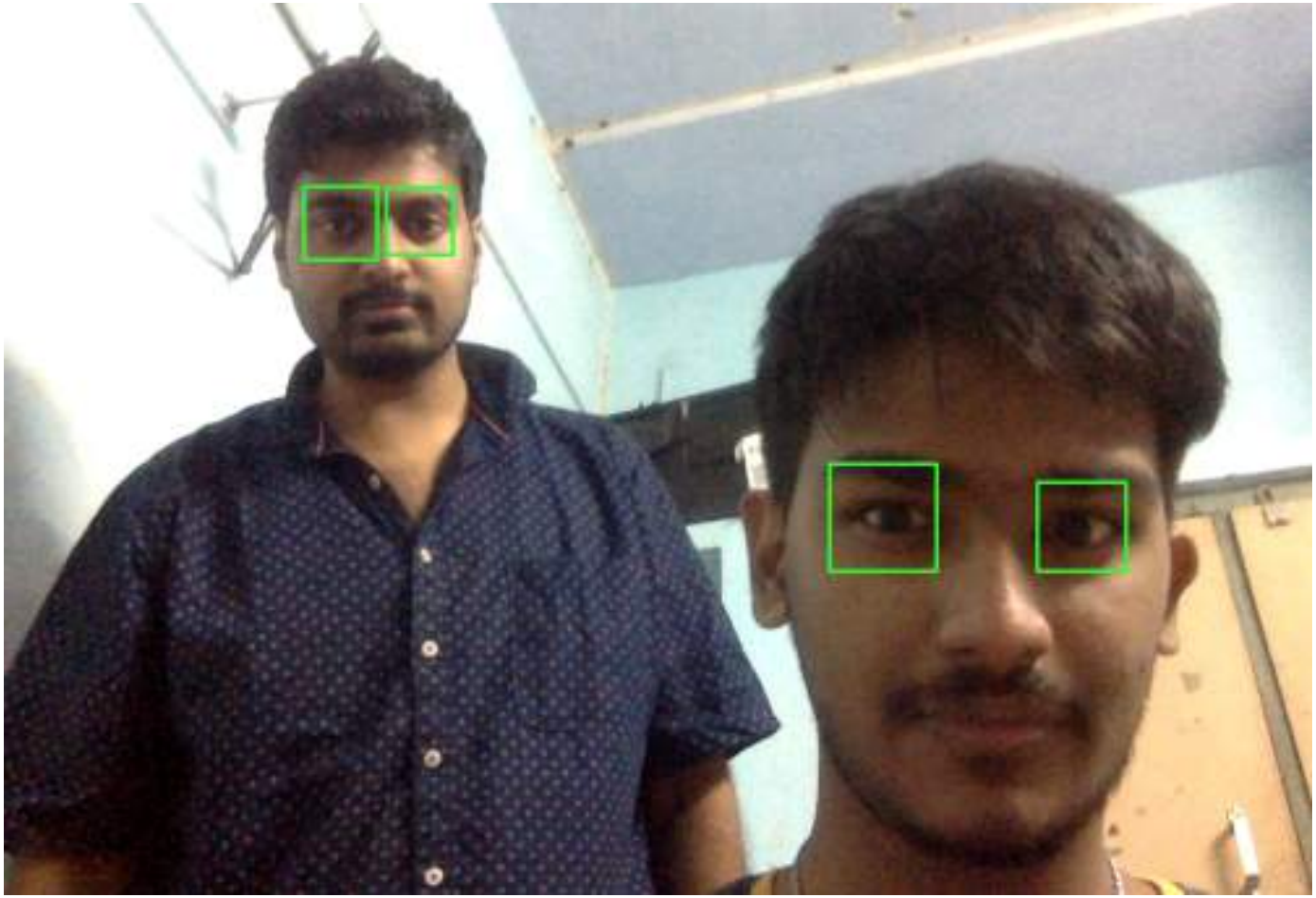

Figure: Test

wxPython

- Library primarily used to deal with PDF files
- Creates a window with an option to input values for the speed or coordinates of the center of a page and scaling of text in the file
- Objective is to use output from detection as an input to wxPython's Scroll(x,y) function and calibrate the values appropriately

Pupil Tracking

- Obtaining Canny edges in the regions where the eyes have been localized
- Applying Hough Circle Transform to obtain centre of the pupil and radius of the iris.
- Obtain the position and orientation of iris and map the same to coordinates on the screen

Refining further

- If time permits, will look into more advanced forms of pupil tracking
- Make an easy to use interface
- Make a single installation file

The End