Requirements: Facial Recognition and UI

Functional Requirements:

* Facial Recognition
  + ~~The software must be able to distinguish between users’ faces in real time~~
  + ~~The input to the algorithm is the webcam video feed.~~
  + The frames of the feed are processed under eigenanalysis using the OpenCV library.
  + The weights calculated for each face in the frame are compared to faces in the face databases (obtained through the process of “training” the application for each user)
  + The faces in the frame are identified with minimal error.
* User Interface
  + The user interface must allow each user to “train” the application for facial recognition and to configure his profile for custom behavior.
  + The application will capture pictures of the user and store them in a folder during the training period.
  + It will also save and update a configuration file for each user based on selections made in the user interface.

Interface Requirements

* Facial Recognition “Interface”
  + Input: Video feed from webcam
  + Output: A list of recognized users and the positions of their faces in the frame.
  + Domain of Output: List of strings and corresponding Vec2 (minimum <0,0>, maximum is frame resolution) positions in the frame
  + Accuracy: More accurate than the sample program
    - Should perform correct identification at least 80% of the time
  + The output containing information of recognized faces will be transmitted at 30 Hz
  + Regarding timing, the application will need to use the facial recognition module to determine who is talking at any given time so that the speech recognition/construction module responds correctly.
* User interface
  + Input: Text and button selections
  + Output: Config file
  + Domain of output: Organized, parsable configuration data that specify how the user’s profile should be customized.
  + Accuracy: The configuration should 100% reflect the options and settings desired by the user.
  + The data will be used each time the user interacts with the application
  + During normal usage of the application, configuration data should not change. Therefore, there should not be a problem with timing the access of data by other modules.