

Business Assistant

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Android: Yes

We plan to create an app to assist with networking. The app, potentially, can be used with a camera mounted on glasses or something similar. The method for using the app will be two parts:

Part 1 (Adding a contact)

1. Capture training images of the desired person (preferably from a constant stream of frames, potentially from a few images taken manually, frames from a short video, or added externally to the app)
2. Take a photograph of the desired person's business card
3. The app will save the association for later use

Part 2 (Accessing a contact)

1. Capture an image of the desired person's face
2. The app will perform face detection, outlining and extraction of the face, then compare it to the training set of images to determine which contact the image contains
3. The app will then pull up and display the image of the business card for the person, allowing for the user to avoid the embarrassing dilemma of having forgot the contact's name

Development steps

The first step in creating the app will be to implement face detection and recognition. We will start with functionality found in OpenCV as a starting point for our detector, namely, the face detect functionality as well as the PCA (Principle Component Analysis) algorithms, as suggested by Enami in his OpenCV tutorial [4]. If time allows, we will make some of the suggested improvements on this algorithm from the papers. After extracting the face from the image, we will extract key points in the images, and compare these to key points of images in our database. After determining the best match for the photo, we will determine the ID for that contact. We will then load the appropriate business card image from the database on the phone, and display it on the screen.

Potentially, the next step in development will be to allow the phone's user to create a new contact on the phone, which will involve taking a series of training photos under different lighting conditions. These images will be stored on the phone, and used for feature comparison. These images will all be tagged with the contact's ID, as will the photo taken of his/her business card.

References

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5. G. Bradski, A. Kaehler, *Learning OpenCV: Computer Vision with the OpenCV Library*, Sebastopol: O'Reilly, 2008
6. Bay, H., Tuytelaars, T., and Gool, L. Surf, Speeded up robust features. In *European Conference on Computer Vision* (May 2006), no. 9.