CIS581 Final Project Checkpoint

Michael O'Meara and Michael Woods

We are pursuing Option #2 for this project. Currently, we are using the following third party tools and libraries:

- Matlab Computer Vision Toolbox
- VLFeat (http://www.vlfeat.org)
- The accompanying code from "Face detection, pose estimation and landmark localization in the wild" by X. Zhu, D. Ramanan. Computer Vision and Pattern Recognition (CVPR) Providence, Rhode Island, June 2012. http://www.ics.uci.edu/~xzhu/face/ (OK'd by TA Sangdon Park)

Regarding our approach, we are using the code published by Zhu and Ramanan to perform initial landmark detection on the input faces. So far, one of most challenging sub-problems we've encountered has to do with obtaining a clear outline of the face, specifically the jawline. The code by Zhu and Ramanan performs well at this task in most test images we've tried. Using the initial points, we then compute the convex hull. This yields a polygonal mask which we will later use to extract the actual face from the source image for warping. Additionally, we also construct a bounding box/region of interest based on the initial set of detected facial points which we use to perform localized feature detection, identifying the nose, eyes, and mouth. The location of the nose is also used to perform left eye/right eye disambiguation and remove false positives. Our next task is to detect the best corners within the local feature bounding boxes (most likely on the eyes and mouth) of the source and target images in order to perform feature matching.