Written Assignment 4

1. When you examine the detected faces on the query images, what types of faces are hardest to detect? Why do you think these faces are hard to detect?

Any face with contrast quite vary to the training set will be hard to detect, i.e. high contrast due to shadow or low contrast due to skin color

2. If you wanted to train a side face, or profile face detector how would you do it? Do you think detecting frontal faces or side faces would be easier?

Frontal faces would be easier because there are more robust features to detect on frontal faces. Side face has more portions of varying features like hair would be difficult to get consistent detection. A possible way to make side face detection to work might be using the feature of nose, eye, ear and possibly the contour of the side face. The drawback is that they might be occluded by the hair.

3. In this assignment we only used Haar wavelets as features. What other features do you think would be useful? Would these new features be computationally efficient to compute?

SIFT and HOG might produce some strong features but these are not computationally efficient than Haar wavelets. It is because Haar wavelet was designed to be simple and weak classifier and only combines a few of them one could obtain excellent detection.

4. Between three types of objects "Newsweek magazines, chairs and sheep" what is the easiest and hardest to recognize and why?

Sheep would be the hardest because the features on sheep are not robust enough. The fur of a sheep doesn't quite make obvious edges and is not rigid.
Newsweek magazines would probably be the easiest to detect because the cover of the magazine is designed to make things very visible so there are a lot of edges and contrast which might help much in generating features.

Point will also be given if reasonable answer is provided.