***Project - Facial Key Point Detection***

The project detects faces and facial key points like eyes, nose and lips/smile in both images and webcam feed. Due to the limited time availability, pre-built HaarCascades were used for these detections. Parameters like ScaleFactor and MinNeighbors were optimised so as to give good performance across a wide variety of images and video feed. This folder contains the following files and sub-folders:

* main\_image.py: This file contains the code for face and facial feature detection in images. Parameters were optimised to give good performance across a variety of images which may differ in pixel size, face size, face profile (front/side) and number of faces (one/multiple).To run the file, the following command can be typed in the command prompt from the folder containing the files:

$ python main\_image.py <image path> e.g. $ python main\_image.py images/robert\_downey\_jr/3.jpeg

* main\_video.py: This file contains the code for face and facial feature detection in videos. As before, the parameters were optimised to give decent performance in different lighting conditions, distance of face from camera etc. The algorithm works especially well when a full frontal face is presented to the camera from a distance of 0.3 m and 1.5m. The file can be run by going to the folder and typing the following command:

$ python main\_video.py

* demo.mp4: This is the demo video showing the working of the webcam script in real time. As can be seen in the video, no face is detected when half of the face is covered by hand. As the hand moves down the face and the features are clearly visible, the algorithm detects them, surrounds them by a bounding box and a displays a description.
* images (sub-folder): This sub-folder contains images of popular actors and music groups that were used in the testing of the image script.
* cascades (sub-folder): This sub-folder contains the cascade files that were used in the detection of face and facial features.