

## Input module

*Mat ImageInput(int argc, char\*\* argv);*

Feed input images from a directory to the face detection system.

*void ImageProcess(Mat image,string command,bool showImage,string fileName);*

Process the input image under different algorithm.

Mat image: input image

String command: Algorithm used in the face detection system

Bool showImage: If true, shows the output image.

String filename: path to the input image

## Pixel-based face detection Module

*Mat Filter(Mat imgOriginal);*

Sequential skin color segmentation filter.

Mat imgOriginal: input image

*Mat HSVFilter(Mat imgOriginal, Mat imgResult);*

HSV Color filter to mask non-human skin pixels in HSV color space.

Mat imgOriginal: input image

Mat imgResult: out image

*Mat YCrCbFilter(Mat imgOriginal, Mat imgResult);*

YCrCb Color filter to mask non-human skin pixels in YCrCb color space.

Mat imgOriginal: input image

Mat imgResult: out image

*Mat RGBFilter(Mat imgOriginal, Mat imgResult);*

RGB Color filter to mask non-human skin pixels in RGB color space.

Mat imgOriginal: input image

Mat imgResult: out image

*Mat SkinColorDetection(Mat imgOriginal);*

Multiprocess skin color segmentation algorithm.

Mat imgOriginal: input Image

## Feature-based face detection module

***void DrawFeatureBox(Mat imgOriginal, vector<Rect> features);***

Draw the facial feature box on the input image.

Mat imgOriginal: input image

Vector<Rect> features: coordinate of the facial box in the image

***vector<Rect> LocateFeatureBox(Mat imgOriginal,string cascadeClassifier);***

Locate the coordinate of the facial features in the image.

Mat imgOriginal: input image.

String cascadeClassifier: path the cascade classifier that are used.

***Mat EyeDetection(Mat imgOriginal);***

Detect eye features in the picture.

Mat imgOriginal: input image.

***Mat FaceDetection(Mat imgOriginal);***

Detect Facial Features in the picture.

Mat imgOriginal: input image.