

System tools. For the implementation of the application I used: C++, CMake 3.10.0-rc3, OpenCV 3.3.1, Visual Studio 2015.

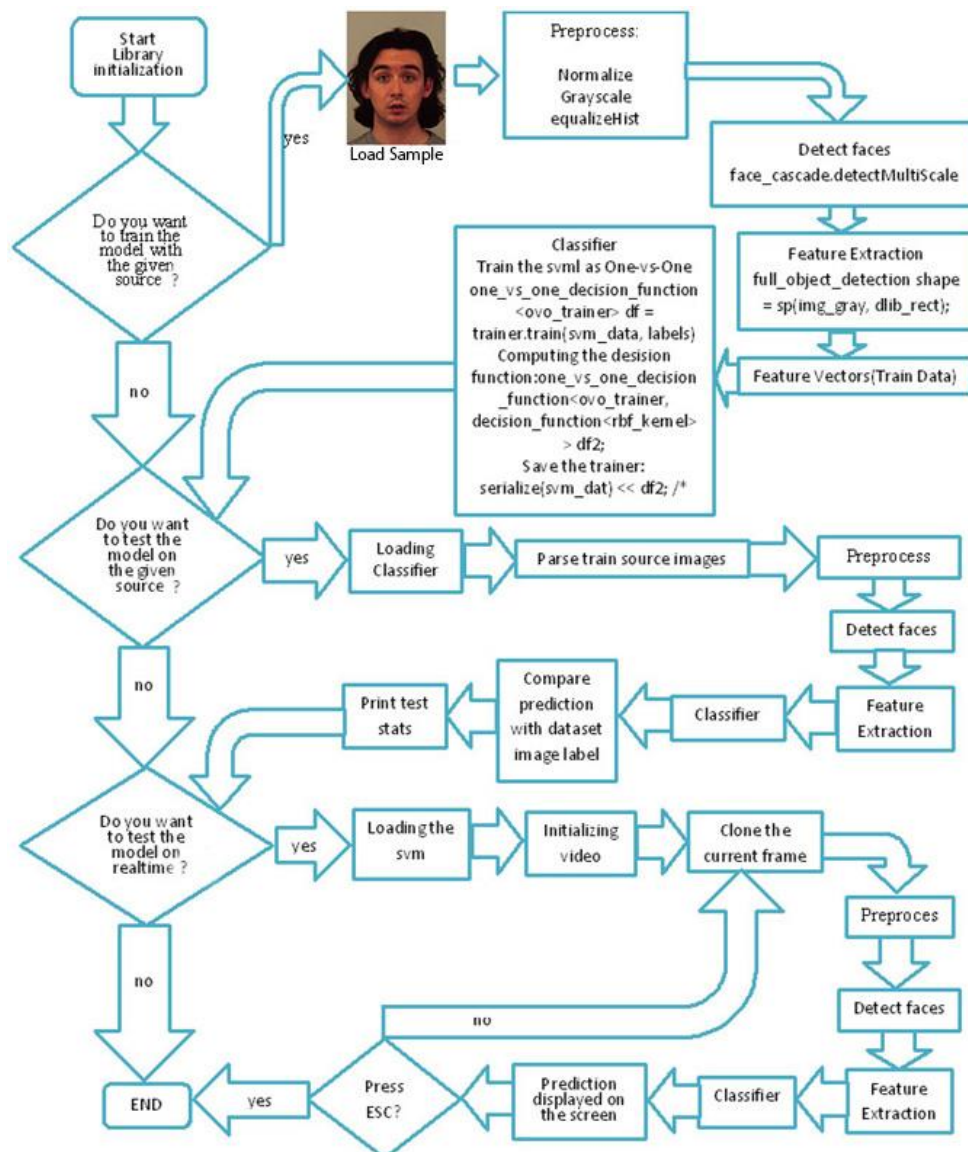
The implementation of the application is done in a simple terminal environment where the user can interact with all the features of the program.

The end-user is able to perform one of the following actions:

- Insert learning data into SVM using predefined images.
- Check SVM on learning data.
- Check SVM on real time camera input.

More specifically, the data base on which the multiclass vector support engine operates consists of a table of 4556 total double values.

Diagram:



The application runs by giving it access to the 980 photos of the KDEF database from the Emotion lab at Karolinska Institutet.

The training lasted 2 hours and 27 minutes.

The success rate predicted by the classifier as shown in the following image is 99.2857% making a wrong prediction in 7 images out of 980.

```
>> Analyzing face object.  
>> Image state extracted (68 landmarks).  
>> Image(C:/Images/BM32SUS.JPG) prediction is surprised.  
>> Prediction is correct  
>> Face object(s) detected.  
>> Analyzing face object.  
>> Image state extracted (68 landmarks).  
>> Image(C:/Images/BM33SUS.JPG) prediction is surprised.  
>> Prediction is correct  
>> Face object(s) detected.  
>> Analyzing face object.  
>> Image state extracted (68 landmarks).  
>> Image(C:/Images/BM34SUS.JPG) prediction is surprised.  
>> Prediction is correct  
>> Face object(s) detected.  
>> Analyzing face object.  
>> Image state extracted (68 landmarks).  
>> Image(C:/Images/BM35SUS.JPG) prediction is surprised.  
>> Prediction is correct  
Correct Predictions : 973  
Failed Predictions : 7  
Correct Ratio      : 99.2857%  
Failure Ratio      : 0.714286%  
Do you want to test the model on realtime : [Y / N]
```

Real time sample results as shown in the following image:

