**1 INTRODUCTION**

**1.1 PURPOSE :**

This is the Software Requirements Specification (SRS) for our project to capture the basic emotions of human face like happiness, sadness, anger, stress, focus , fear etc. It will illustrate the purpose and functionality of the app in CS242. It will also explain the details of the project’s requirements, design issues, components, constraints, interface and interactions with other applications.

**1.2 PRODUCT SCOPE:**

The project is an android based mobile app to indicate the user’s mental state using an image of the user. Stress, disgust, Happiness, Fear/surprise and focus are the main mental states that the application will detect. The application is mostly intended for the younger generations as they go through a lot of mood swings, due to puberty and haven’t fully grasped their emotions , but it can be used for all types of age groups. This app can be used by companies and people who create stuff like videos for entertainment of audience to get feedback for their content.This app can also be used for fun activities for kids. The app will provide real time display of mental state of the user, so user can use it to know his/her mental state during some other activity and also provide the analysis of an older image present in gallery of the user, for nostalgia and fun.

**2 SPECIFIC REQUIREMENTS**

**2.1 EXTERNAL INTERFACE REQUIREMENTS**

This section provides a detailed description of all inputs into and outputs from the system. It also gives a

description of the hardware, software and communication interfaces and provides basic prototypes of the

user interface.

**2.1.1 USER INTERFACE-**

As the user opens the app on her smart phone, she is prompted with two options on the first screen;

vis. "choose an image from the gallery" and "detect your emotion", with a button corresponding to each one.

case 1-

If the user opts to choose an image from the gallery, the phone gallery gets opened and the user

can select one picture(max). If there are more than one faces in the picture, a prompt appears on

the screen asking the user to change her preference. else, the selected photo gets loaded on the next

screen (circular image on top middle). The user clicks "go" and the emotion associated with the selected

image is detected and displayed on the screen.

case 2-

User selects the second option and goes for real time emotion detection. Here, when the user

clicks on the second button, front camera of the phone opens up and the user can see her emotion

being detected. This is noticed from the imoji of the associated becoming bigger and occupying the bottom of the screen.

The user can opt out of the app anytime by clicking on the red cross marked button on the top right of the screen.

**2.1.2 HARDWARE INTERFACE REQUIREMEMTS**

The following app has being designed for android phones (android 4.1+), having front camera of atleast 2 MP.

There is as such no more hardware requirements; the real time detection is managed by the internal camera of

the smart phone whereas the static image detection is managed by the gallery in the phone.

**2.2 SOFTWARE SYSTEM ATTRIBUTES**

**2.2.1 RELIABILITY**

The following application is designed to be built and deployed on android platform, and will reliably run on

any android phone with android version above 4.1.The reliability of the app in emotion detection will depend

primarily on the vastness of the training data, a requirement that needs to be taken care of on the developer

side while working on the project

**2.2.2 AVAILABILITY**

The application will be available for download on the google play store and will run 24\*7 with or without internt connection.

**2.2.3 SECURITY**

Users of the app can in no way see the emotion results of other users without their prior knowledge and permission.

**2.2.4 MAINTAINABILITY**

Maintenance is one form of change that typically is done after the software development has been completed.

As the time changes, so do the needs. This application needs a timely updation of the expression and face

database suiting to the location where the app is intended to be used, and so the database needs to be expanded

upon every updation of the app.As an example, for the app to show best results in emotion detection, training

data comprising of faces from different parts of the world is needed, so as to facilitate better detection.

All this maintenence will be timely done on subsequent updations of the app by the admin.

**2.2.5 PORTABILITY**

Since the app is built for portable android phones, it is freely portable and needs no re-download or update if

it is to be used from some different location of the world.Also, the app can be freely transferred from one device

to another, given that the other device complies to the hardware and software requirements as specified in section\_\_\_.

**2.3 FUNCTIONAL REQUIREMENT**

Main screen - This will be the first screen that will be displayed . It will allow user to access different modes based upon user's preference.

Various fields available on this screen will be.

1)Choose image - select images from user's gallery

2)Real time analysis - starts emotion detection using front camera.

**MODE 1(image analysis)**

-This screen will be accessible only if user has chosen an image from gallery. User shall

either continue analysis or choose another image.

-Searching for a single face from the image and showing user the selected region.If multiple

faces are present user has to choose another image, he/she can't proceed further.

-If single face is detected in image by face detector and user is

satisfied with the image user can continue further.

-This screen will appear if user has chosen an image for emotion detection .This screen shall

show the face under recognition and emotions detected in the image in decreasing order of most likely emotion.

-User can exit the screen he/she shall be directed to main screen where user again has the same choices

**MODE 2(real time emotion detection)**

-This screen will be accessible only if user has chosen real time emotion analysis by front camera.

There shall be a button by clicking it user can start the analysis.

-Button to stop the analysis and it shall direct the user to main screen

-Detection of face from the images. User has to focus front camera to only one face in case if there is multiple face detection.

-Identification of various points on face which are useful for emotion detection.

-Emotion detection using the processed information and calculation of results.

-There shall be a pie chart at the bottom of the screen showing the calculated value of the

user's emotion.

-Pie chart will change it's shape dynamically if user will change it's emotion.