Software Requirements Specification

for

Machine learning APP

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

This software requirements document specification provides complete information about the system called MML (Modules of machine learning). D & S (Detection & Scanning) is basically an application for multi purpose work like detecting face, recognition of text from image etc.
In this application we are including three of the MLkit functions. i.e., Face detection, Text recognition, and barcode scanner.

1.2 Document Conventions

User - Someone who interacts with the application.

1.3 Intended Audience and Reading Suggestions

Our intended audience is anyone who wants to scan the barcode, copy the text from images or anyone who wants to detect the faces.

1.4 Product Scope

Face Detection is to identify the face of a person, which can be identified by multiple faces in one image, on- device.
Text recognition feature is used to extract text from an image.
Barcode scanning is to read on-device encoded data according to various barcode format standards, regardless of the image orientation, it can be read, including QR code

1.5 References

- https://firebase.google.com/
- https://github.com/
- https://firebase.google.com/docs/ml-kit/android/recognize-text
- https://firebase.google.com/docs/ml-kit/detect-faces
- https://firebase.google.com/docs/ml-kit/read-barcodes

2. Overall Description

2.1 Product Perspective

MML will replace the current system of using the different apps for different modules like face detection, barcode scanner or text recognition. It is very easily usable for users ane attractive UI makes it more user friendly. It gives accurate results.

2.2 Product Functions

There are mainly three main function in this application first is face detection. In this function app will scan the users face and gives the information of the face. Second is text recognition. In this function the text will be given as a output from an image sothat the user can copy it from there. And last function is barcode scanning. In this function any barcode or QR code will be scanned using camera and the info. present in that code will be given as output.

2.3 User Classes and Characteristics

Every type of people will use our app because all common people will need any of these functionalities anytime. Mostly young ones can easily use our app as they use their smartphones for everything to make their life easy.

2.4 Operating Environment

The environment requirements are only smartphones (Android) and tablets.

2.5 Design and Implementation Constraints

The most important thing is camera of the phones. As in every functions there is a need of camera facility. And we are using functionalities of firebase MLkit in implementation.

2.6 User Documentation

We don’t have user documentation or tutorials.

3. External Interface Requirements

3.1 User Interfaces

When we start our application the first thing is it will display the logo of our application . Then It Will show the module we will use in the system one by one with the description ..For ex: we are going to use face detaction module so it will display the discription of it and how the module will work . After that when we press next button it will go to the second module and perform the same task as the first module and at the 3 and final module we can see a finish button on the right hand corner when we press that it will took to the FUNCTION page where we can see 3 modules are arraged in a sequesnce manner . Whichever user want to try he/she just have to click on the module and it would work according to their function . You can click a photo for face detection and for image to text recognization.

3.2 Hardware Interfaces

This app can be used by any type of android phone user. This all functionality is provided by google firebase MLkit. It is an android application so that the system should have android operating system. There is no designated hardware.

3.3 Software Interfaces

- OS : WINDOWS
- Tool : ANDROID STUDIO
- Domain : ANDROID, ML
- Language Used : JAVA
- MLkit from firebase

3.4 Communications Interfaces

The user will be able to use our system via any Android phones or tablets because it is an android app and is accessible from anywhere on the globe. There is zero user data involved so users need not to worry about the security issues.

4. System Features

4.1 Functional Requirements

- Functional requirements define the fundamental actions that system must perform.
- The functional requirements for the system are divided into three main categories text recognition, face detection and barcode scanning.

1. Face Detection :

- Face Detection is to identify the face of a person, which can be identified by multiple faces in one image, on- device.
- Can specify the coordinates of the ears, eyes, cheeks, mouth, nose, and can also detect whether the face is smiling or not.
- Before starting to detect faces, if you want to change the basic settings of the model, you can find the config in the table below.

2. Text Recognition :

- This feature is used to extract text from an image.
- This feature help users more comfortable, such as Filling in the ID card or filling in the lottery number to check, etc.
- Can develop both On-device and Cloud.
  This feature will extract only English letters

3. Barcode Scanning :

- Barcode scanning is to read on-device encoded data according to various barcode format standards, regardless of the image orientation, it can be read, including QR code
- In the case of 2D formats, many data formats are supported, such as URLs, contact information, calendar events, email, phone numbers, SMS message prompts, geographic location, etc.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The application must be responsive and scalable for use. The app should work on any of the android devices running 4.1 or later. The application will respond to the size of the screen. It's response time is fast.

5.2 Safety Requirements

The application shall be protected from any external danger or attacks.

5.3 Security Requirements

It should be very reliable for the every users so that they can use the application as per their needs.

5.4 Software Quality Attributes

- **CORRECTNESS** : The application must provide correct data to the users of the application
- **FLEXIBILITY** : The application should be for friendly for the users so they can use it very easily.
- **USABILITY** : The application should satisfy a maximum number of customer's needs.