Cerberus

Online Contact Details Manager
Software Requirements Specification
For Text extraction and storing

Version 1.0

Revision History

Date	Version	Description	Author
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Software Requirements Specification

1. Introduction

This section illustrates scope and overview of this SRS document and also describe the purpose of the document. Abbreviations and definitions are provided.

1.1 Purpose

The purpose of this document is to illustrate detail description of the requirements for the Online Contact Details Manager System (OCDM). Document will explain about system interface design, database design, system constrains, requirements, interactions.

1.2 Scope

OCDM is a mobile application based on OCR technology. Application will help user to extract text details from visiting cards and advertisement boards. User can store the details on the device and retrieve anytime. User can store the phone number details extracted from image, on main contact list. User can extract a visiting card using application camera or from gallery. Application need access to gallery and camera no need for internet or GPS connections. If user wish to store the data on online, he can with a premier account. Premier account need payment from user. User can share his contact details via social media (facebook messenger, whatsapp).

1.3 Definitions, Acronyms, and Abbreviations

User	Someone who interacts with the mobile phone application
OCDM	Online Contact Details Manager
OCR	Optical character recognition
SRS	Software requirement System
RUP	Rational Unified Process
API	Application Programming Language

1.4 References

[1] Vala, HJ & Baxi, Astha (2013). "A review on Otsu image segmentation algorithm". *International Journal of Advanced Research in Computer Engineering \& Technology (IJARCET).*

[2] Jianzhuang, Liu and Wenqing, Li and Yupeng, Tian (1991). "Automatic thresholding of gray-level pictures using two-dimension Otsu method".

[3] *Pulli, Kari; Baksheev, Anatoly; Kornyakov, Kirill; Eruhimov, Victor (1 April 2012). "Realtime Computer Vision with OpenCV".*

[4] *"Android Studio Release Notes". Android Developers Official Website. accessed on 10th January 2018.*

1.5 Overview

The reminder of this document includes 3 chapter. 2nd chapter illustrate about the system functionalities and system interaction with other systems. 3rd chapter explain about the requirement specification in detail and interface design. 4th chapter prioritize the requirements argue about the periodization.

2. Overall Description

This chapter illustrates overview of the whole system. It will explain how system interact with external systems and give some fundamental functionalities and requirements of system. More over this topic will concern about type of stakeholders and functionalities available for each type. Constrains and assumptions of the system will be explained at last.

2.1 product perspective

OCDM is based on mobile application. Mobile application has 6 important tasks.

1. Extract text details by apply OCR algorithm.
2. Bind a Tag to extracted text, by finding which text belongs to which part (0772343445 is phone number etc.).
3. Store details on mobile device.
4. Show contact details based on user selection.
5. Share contact details via social media (if user wants).
6. Store details on online.

If user purchased a premier account, he/she can use 6th option other users cannot use 6th option. But all the options will be integrated with the system.

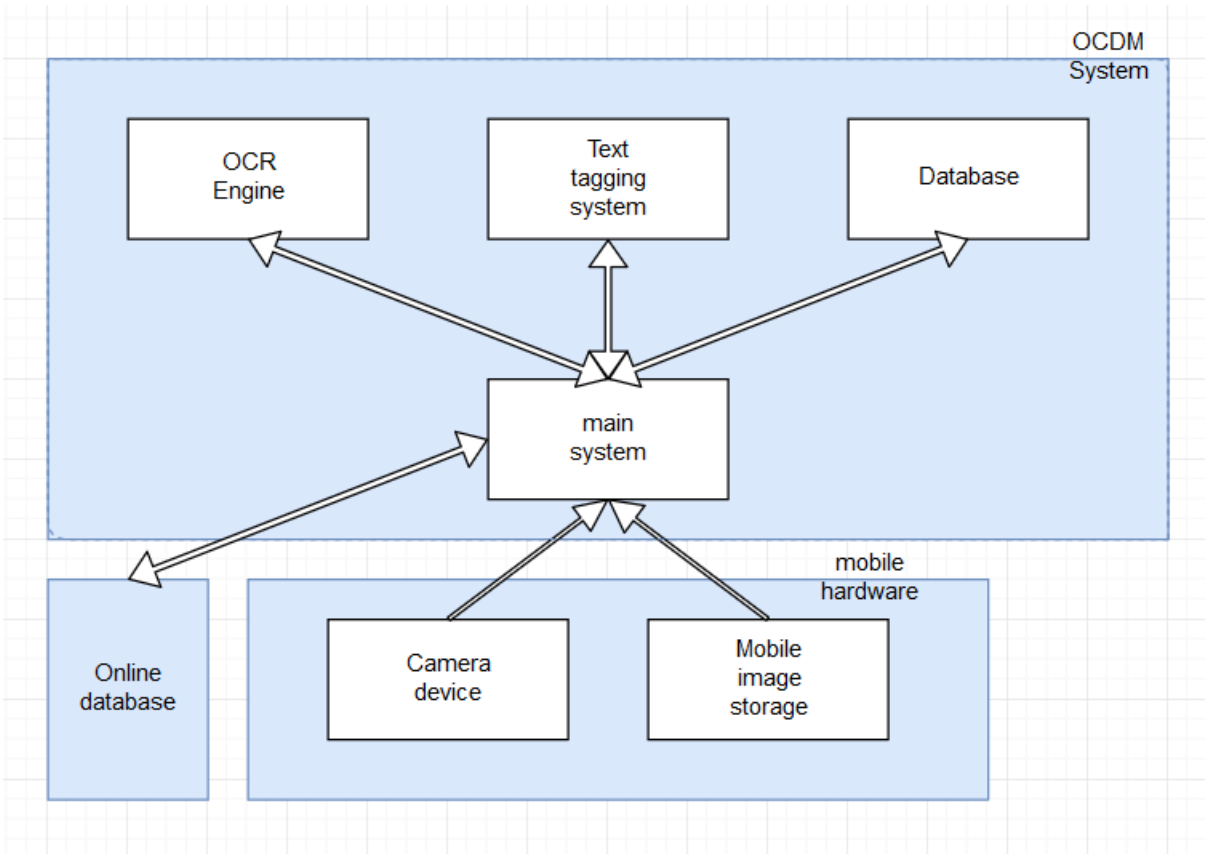


Figure 1- Block diagram

2.2 Product functions

Using mobile application, user can extract text on a specific image and store them as a digital card. User can extract text from a image that taken from camera activity (system will provide) or from selected images in gallery. When user apply OCR function to the image, system will process text extracted from the OCR and bind the text with appropriate tags. Finally, system will provide tagged texts and user can modify texts and tags. If user wants to save the contact number on main contact application will do it for them. If user wants to store the details on online application will prompt user to buy a premier account so that they can store on online. Anytime user can share there

contact details if they are connected with internet. User can search contact details using filters for example district.

2.3 User characteristics

There are two types of user normal user (has regular free account) and premier user (has a premier account). To get a premier account user need to make a payment. Normal user doesn't want to make any payment but to get a premier account user must make a payment via online. Premier user can access all the functionalities mentioned above and normal user can do above except store details on online functionality.

2.4 Constraints

Considerable constraint will be accuracy of the extracted texts. Check whether extracted texts correct or not via programming is very difficult. OCR engine is not reliable at every condition best output depends on brightness of the image and many other factors like shake, blurred, shining. These are the factors that will impact output more.

2.5 Assumptions and dependencies

One assumption is all the phones which are going to use this application have sufficient performance.

2.6 requirements subsets

3. Specific Requirements

This section will explain functional and non-functional requirements (quality requirements) of the system. It will illustrate system feature in detail.

3.1 Functionality

3.1.1 User

3.1.1.1 Functional requirement 1.1

ID: FR1
TITLE: Download mobile application
DESC: A user should be able to download the application through play store (app store).
DEP: None.

3.1.1.2 Functional requirement 1.2

ID: FR2
TITLE: Notify users about new release.
DESC: Notify users about new releases that are made to the system. And user should be able to download the new version.
DEP: FR1

3.1.1.3 Functional requirement 1.3

ID: FR3
TITLE: User registration normal account
DESC: If a user downloaded an application he should be able to register for a normal account.
DEP: FR1

3.1.1.4 functional requirement 1.4

ID: FR4
TITLE: User registration premier account
DESC: If a user downloaded an application he should be able to register for a premier account.
DEP: FR1

3.1.1.5 Functional requirement 1.5

ID: FR5

TITLE: Add an image from camera.
DESC: An application user should be able to add a image by taking a photo by click camera icon on the screen.
DEP: FR4 or FR3

3.1.1.6 Functional requirement 1.6

ID: FR6
TITLE: Add an image from gallery.
DESC: User should be able to add an image from gallery to scan by clicking gallery icon on the screen.
DEP: FR4 or FR3

3.1.1.7 Functional requirement 1.7

ID: FR7
TITLE: View image.
DESC: User should be able to view image selected from gallery or captured using camera.
DEP: FR6 or FR5

3.1.1.8 Functional requirement 1.8

ID: FR8
TITLE: Apply OCR on image;
DESC: User should be able to apply OCR algorithm on selected image by clicking a button.
DEP: FR7

3.1.1.9 Functional requirement 1.9

ID: FR9
TITLE: Change suggested text.
DESC: Once system provide text details with tags, user should be able to change the suggested text.
DEP: FR8

3.1.1.10 Functional requirement 1.10

ID: FR10
TITLE: Change suggested tags.
DESC: Once system provide text details with tags, user should be able to change the suggested text.
DEP: FR8

3.1.1.11 Functional requirement 1.11

ID: FR11
TITLE: store contact detail on database.
DESC: User should be able to store the details extracted from the image, on database by a button click.
DEP: FR8

3.1.1.12 Functional requirement 1.12

ID: FR12
TITLE: Store contact phone number on main contact on mobile.
DESC: User should be able to store the contact number on main contact on mobile device with name and possible other information.
DEP: FR8

3.1.1.13 Functional requirement 1.13

ID: FR13
TITLE: Search contact.
DESC: User should be able to search specific contact or search a group of contacts using filter.
DEP: FR4 or FR3

3.1.1.14 Functional requirement 1.14

ID: FR14
TITLE: Share contact
DESC: User should be able to share his contacts with others via social media.
DEP: FR4 or FR3

3.1.1.15 Functional requirement 1.15

ID: FR15
TITLE: Store online
DESC: User should be able to store or sync his contacts on online.
DEP: FR4

3.2 Usability

3.2.1 Usability Requirement 1

ID: UR1
TITLE: Application Usability
DESC: To become a normal user who can do every function on the application, it will only take 1 to 2 hrs because UI will be very simple.

3.2.2 Usability Requirement 2

ID: UR2
TITLE: Take picture
DESC: One of the key thing to achieve high level accuracy in text extraction is, capture well focused and bright picture. To become a expert in taking that kind of picture user need about 10 to 20 captures.

3.3 Reliability

3.3.1 Reliability Requirement 1

ID: RR1

TITLE: search reliability

DESC: Availability of the search option is 100% as it does not depend on network connection. Accuracy of the search will be 100% as system is going to use SQLite as a database and it is integrated with mobile. Mean time to failure and mean time to repair will be infinite because failure cannot be take place on this system with respect to search.

3.3.2 Reliability Requirement 2

ID: RR2

TITLE: Text extraction reliability

DESC: Availability of the feature is 100% as it is integrated with the system. Accuracy depends on the image quality for a well-focused and bright image accuracy will be 90%. Mean time to failure is about 1-month period and mean time to repair will be 2 days.

3.4 Performance and Security

3.4.1 Performance Requirement 1

ID: PR1

TITLE: OCR text extraction
DESC: Response time for a OCR extraction is about 3secs.

3.4.2 Performance Requirement 2

ID: PR2
TITLE: Contact storing and retrieving.
DESC: As system using integrated database on mobile the capacity of the details that system could use is depend on the feature of the mobile device. Response time to store contact detail and retrieving is less than 1 sec.

3.4.3 Performance Requirement 3

ID: PR3
TITLE: Contact storing on online
DESC: Response time to store details on online is depend on internet connectivity. At usual speed it will be less than 1 sec. number of contacts we can store on online is not restricted because we use text to store.

3.5 Supportability

3.5.1 Supportability Requirement 1

ID: SR1
TITLE: IDE
DESC: To the fast development and to get better support from android-based libraries, android studio is required for this system development.

3.5.2 Supportability Requirement 2

ID: SR2
TITLE: OCR library
DESC: To extract the text from the image system need a very powerful, reliable and evolving OCR library. OCDM uses Google vision OCR library.

3.5.3 Supportability Requirement 3

ID: SR3
TITLE: Database
DESC: To store contact details system need a database and OCDM uses SQLite for this purpose.

3.6 Design Constraints

3.6.1 Design Constraint 1

ID: DC1
TITLE: OCR library
DESC: System uses Google vision library. we cannot override some of the methods.

3.6.2 Design Constraint 2

ID: DC2
TITLE: mobile available space
DESC: minimum of 50 Mb is needed to download and use the application.

3.6.3 Design Constraint 3

ID: DC3
TITLE: Development Tools
DESC: Application development depends on Android studio ide and google vision OCR library and also in OpenCV.

3.6.4 Design Constraint 4

ID: DC4
TITLE: Language
DESC: Application will be developed using java language.

3.7 On-line User Documentation and Help System Requirements

User manual will be provided to the user with application.

3.8 Purchased Components

OCDM does not purchase any components for the development. For the online storage system should pay for firebase.

3.9 Interfaces

This section will explain about the interface information.

3.9.1 User Interfaces

Login page: When user open the application, user will see this interface
- Textboxes: for email and password
- Button: for sign in.
- Link: for register new user.

Register page: When user click on registration link it will pop up.
- Textboxes: for email and password
- Check boxes: for select normal user or premium user.
- Text boxes: for bank details if user checked premium.
- Button: for sign up.

Home page: after login user will see this page.
- Card views: to show contact details in alphabetical order.
- Flash buttons: to insert image from camera, insert image from gallery, search
- Action bar-select option: for select some views. After user select some cards here will be delete and share buttons on the option.

Detail configuration page: will be shown when user select an image for OCR process.
- Textboxes: to show extracted details with tag combo boxes.
- Combo boxes: to show suitable tags for the text.
- Buttons: to add to database, to add to main mobile contact list.

Search page: will be shown when user click search button.
- Text boxes: to get user filter for the search
- Button: to search.

3.9.2 Hardware Interfaces

This application doesn't have any hardware interfaces.

3.9.3 Software Interfaces

This application use camera software integrated with the mobile application. By invoke a intent call to that camera software system will get image capture. To store contact details on online application will communicate google firebase via mobile network.

3.9.4 Communications Interfaces

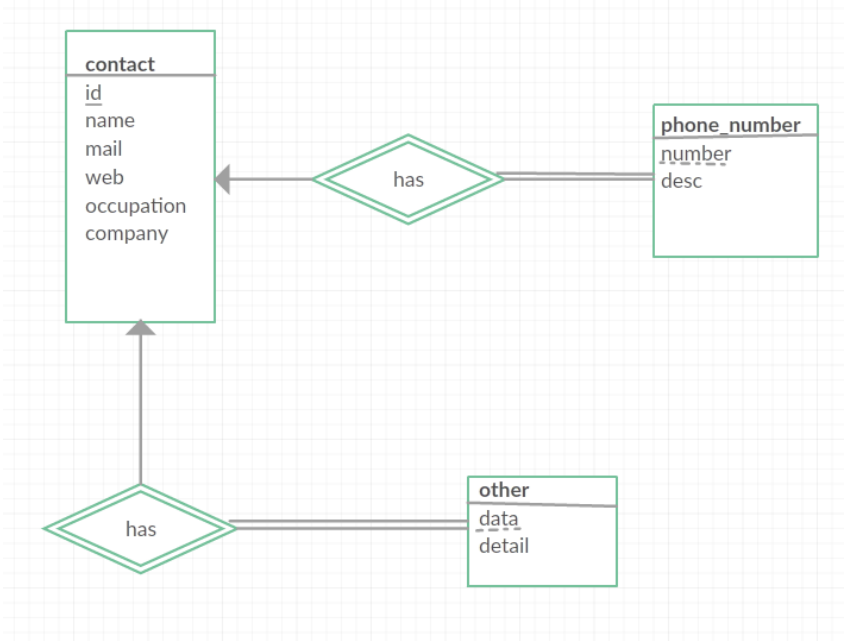
For the online storage system will communicate google firebase via mobile network connection.

3.10 Database Requirements

SQLite will be used as a database for the OCDM system. Because of SQLite integrated with android System don't need any declaration or license.

The following is ER diagrams for the database design.

User
email name password



3.11 Licensing, Legal, Copyright, and Other Notices

System uses google vision api it is free. Only thing about license acceptance to use this api is accept agreement when installing sdk. OCDM uses firebase storage and authentication so system need license to access firebase. As this is an android application and also open source software, this application will be released under Apache 2 license.

3.12 Applicable Standards

Software quality standard in accordance with ISO/IEC 9126:2001 and ISO/IEC 25010:2011.