Software Requirements Specification

for

Identification app based on Augmented Reality

Version 1.0 approved

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IT 3rd Year

2nd August, 2017

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Revision History

Name	Date	Reason For Changes	Version
Version 1.0	NA	NA	NA

1. Introduction

1.1 Purpose

This project aims to create an android and Windows based, identification application on the grounds of Augmented reality along with a landing website. Our application will identify the different buildings and areas of Shri Govindram Seksaria Institute of Technology and Science, Indore(M.P) through camera and will display information of the same.

1.2 Document Conventions

Standard IEEE conventions are followed in the entire process of documentation.

1.3 Intended Audience and Reading Suggestions

This is made catering to the queries of users (mainly students of sgsits) ,developers ,testers and documentation writers.

1.4 Product Scope

The scope of this project is wide,along with people associated with SGSITS,Indore(M.P), it is useful for all those who want to know about SGSITS. It will identify the buildings through their geo-location(latitude and longitude) and then, through AR will give brief description about them and recognise college logo and give dedicated details about college..

1.5 References

[1]*Thomas Auer , Axel Pinz, Building a Hybrid Tracking System: Integration of Optical and Magnetic Tracking, Proceedings of the 2nd IEEE and ACM International Workshop on Augmented Reality, p.13, October 20-21, 1999*

[2] http://www.businesswire.com/news/home/20170501006025/en

[3] https://en.wikipedia.org/wiki/Augmented_reality

[4] https://developers.google.com/tango/apis/unity/unity-simple-ar

2. Overall Description

2.1 Product Perspective

Augmented reality is the demand of the time. It is the technology that creates an interface between real world and virtual reality. Augmented reality is a live direct or indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data. So, through AR, this project aims to identify the buildings and important locations present in SGSITS college along with its logo and give desired information and insight to college. Thus, we are aiming to integrate AR with navigation system.[1][3]

2.2 Product Functions

The functions of our product are described as follows:

1. ***Logo Identification** : This module scans SGSITS logo through smart phone's camera and on successful recognition gives an augmented real graphic giving details about SGSITS.*

2. ***Identification** : This module will take you to a tour of SGSITS, where you can roam around the campus and get all the required details of any building by just getting it into your field of view through your phone's camera using Augmented reality.*

3. ***Feedback**: This module will help you connect to developers. You can submit your feedbacks and queries directly from the application in hand and you will be answered shortly from admin.*

2.3 User Classes and Characteristics

As discussed above, most of the modules will be based on augmented reality, but there are other features which will cater your needs.They are as follows:

1. ***Menu panel** : This is the Panel from where you get a list of all functionalities.*

2. ***Logo Scan Module** : This module will use augmented reality for image recognition.*

3. ***Identification** : This module will work on augmented reality to give you details about various buildings inside SGSITS campus.*

4. ***Login/Signup** : This is another module which will help user to register with application and grant access to extended features of application.*

5. ***FeedBack*** *: This module will function as Link between developers and users, through this app will provide a medium of communication.*

2.4 Operating Environment

The application will work on smartphones with GPS and inbuilt camera.The operating system on which app will function will be android version 3.0+ and windows 7.0+.

2.5 Design and Implementation Constraints

1. *For smooth functioning of application, it needs to be installed in Smart Phone having camera and GPS hardware, with proper internet connection.[4]*

2. *Phone must have minimum 50 MB of empty space.*

3. *Language used is ENGLISH. No other language is used in User interface design.*

4. *This application is not developed for IOS users.[4]*

2.6 User Documentation

Along with the product, a beginners' guide, a 'how-it-works' manual and a FAQ section will be provided to the users in the landing website of the mobile application.

2.7 Assumptions and Dependencies

The application will be a hybrid app based on augmented reality, which will connect user's real world to virtual reality. An Augmented reality SDK will be used in development of product and the framework on which the app will be developed is unity.[3][4]

As the application is a part of educational project and will be used for research and development purpose, it will use free version of augmented reality SDKs. Hence there may be a possibility of watermark present on every screen of application of the organization.[3][4]

3. External Interface Requirements

3.1 User Interfaces

When user starts the app, he/she will land on menu panel. This menu panel contain various options which will navigate user to pages accordingly. Menu will have option to scan SGSITS logo,

which on successful scan give an augmented real graphical character having information about SGSITS.
Menu Panel will also have option for identification purpose of various buildings in SGSITS Campus. This feature will only available to the users who have successfully registered in application.Another Feedback option will also available for users to directly communicate with the developers.

3.2 Hardware Interfaces

Since neither the mobile application nor the web portal have any designated hardware, it does not have any direct hardware interfaces. The physical GPS is managed by the GPS application in the mobile phone and the hardware connection to the database server is managed by the underlying operating system on the mobile phone and the web server. Also, the identification system uses the in-built camera of the device on which the app is installed.

3.3 Software Interfaces

The mobile application communicates with the GPS application in order to get geographical information about where the user is located and the visual representation of it, and with the database in order to get the information about the location, based on latitudes and longitudes. The communication between the database and the web application consists of operation concerning both reading and modifying the data, while the communication between the database and the mobile application consists of only reading operations.

4. System Features

4.1 Logo scan using Augmented reality

4.1.1 Description and Priority

This feature is open to all. On the scale of 1 to 10 it is on the 10 priority as it is expanding scope of application to the people who are not part of SGSITS,Indore as well. Through this one can get all the basic necessary details of the college.

4.1.2 Stimulus/Response Sequences

Stimulus: Open camera and ask for scan for LOGO.
Response: On successful scan gives Augmented real graphical details of college.

Stimulus: Will have on click functionality on graphic.
Response: On successful click, will redirect to the login/register functionality for other modules.

4.1.3 Functional Requirements

This functionality allow user to scan SGSITS logo image he/she is having.
It will allow user to Login and signup to use full application.

4.2 Identification of Campus details using Augmented Reality

4.2.1 Description and Priority

This feature is open to only registered users. On the scale of 1 to 10 it is on the 9 priority as it is the main functionality which allows users to experience Augmented Reality in their own smartphone. Through this one can get all the basic necessary details of the college and virtual graphics in their real world..

4.2.2 Stimulus/Response Sequences

Stimulus: There will be Login/Register functionality.
Response: On successful login, will redirect to building identification system..

Stimulus: Open camera and ask for scan for buildings.
Response: On successful scan gives Augmented real graphical details of college.

4.2.3 Functional Requirements

This functionality allow user to scan SGSITS buildings.
It will allow user to Login and signup to use full application.

4.3 Feedback System

4.3.1 Description and Priority

This feature is open to only registered users. On the scale of 1 to 10 it is on the 9 priority as it is the functionality which allows users to connect directly to the developers and It is also important because positive feedbacks are always appreciated and help developers to improve applications.

4.3.2 Stimulus/Response Sequences

Stimulus: There will be Login/Register functionality.
Response: On successful login, will redirect to feedback system..

Stimulus: Has various fields where user can give input accordingly.
Response: On successful submit feedback get saved in developer database..

4.3.3 Functional Requirements

This functionality allow user to connect to the developer team.
It will allow user to Login and signup to use full application.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

With regards to intended audience,i.e. members of SGSITS,Indore and others (outsiders) ,the application is designed to cater to more than 100 queries/day.

5.2 Safety Requirements

There is no possible loss, damage or harm that can result with the use of our application. Users need to be aware of their immediate surroundings while navigating through application.

5.3 Security Requirements

The mobility domain has a privacy sensitive nature, specifically with regards to the location tracking of users. In order to ensure security of our system, the system can make use of the following strategies:

- *Anonymization & aggregation, so that location information may be shared safely without disclosing personal information.*
- *Encryption, for all data that is privacy sensitive, but must be persisted on the server in order for basic functionality*

5.4 Software Quality Attributes

5.5 Business Rules

The users will be able to download the application,by a link which they will acquire through registering on our website. Registration is must. The usage of application will be free of cost, without any charges for any feature of the application.