Software Requirements Specification

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1 Introduction

The following document will outline and describe the mobile application meant to answer the question "What is this?" with respect to natural optical phenomena. In this document, the question of what the application will do will be addressed, however emphasis will be made to avoid addressing how the mobile application will accomplish its tasks. This document will define the purpose and scope of the application, along with any associated definitions, acronyms and abbreviations. In addition, product perspective, product function, user characteristics, constraints, and assumptions and dependencies will be explored with respect to how they apply to the mobile application. Functional requirements and non functional requirements will also be defined in this document.

1.1 Purpose

As mentioned previously, the requirements document is meant to describe everything that the system must do. This will include all tasks that the application must complete as shown in the functional requirements, as well as how the application must look, perform, be maintained, be usable and be secure as shown in the non functional requirements. Through the use of business events and viewpoints, the requirements document will outline how the application must react to different user stimulus. The intended audience of this document is the teaching assistants as well as the professor for the course Software Engineering - Large System Design.

1.2 Scope

The application will be called NatureOptix. The product will allow the user to answer a set of questions asked by the application. The application will then try to determine what natural phenomena the user is trying to specify based off the users answers. The application will also allow the user to take pictures of the phenomena and post it to social media. The objective of this application will be to enable the user to identify natural and optic phenomena. Other features, such as allowing the user to post picture to social media will help to generate awareness of different natural and optic phenomena.

1.3 Definitions, Acronyms, and Abbreviations

Not Applicable

1.4 References

Not Applicable

1.5 Overview

The rest of this document will be organized into 3 parts as follows: Overall Description, Functional Requirements, and Non-Functional Requirements. Each of these sections are further broken down. The Overall Description will discuss product perspective, product function, user characteristics, constraints, assumptions and dependencies, and apportioning of requirements. The Functional Requirement will list all functional requirements and provide business events and viewpoint corresponding to each. Non-Functional Requirements will be divided into the following sections: Look and Feel requirements, Usability and Humanity Requirements, Performance Requirements, Operational and Environmental Requirements, Cultural and Political requirements, and Legal Requirements.

2 Overall Description

2.1 Product Perspective

The product under production will be similar to Akinator, the Web Genie. Akinator is an Internet game that is based off of twenty questions. The game has the user think of a character or famous person. Akinator then asks the user a series of questions that can be answered with either Yes, No, Maybe, or Don't Know.

Akinator than guess who the user is thinking of based on the answer given. Unlike Akinator, this application will focus solely on identifying natural phenomenon based on user information.
Due to the time constraints of the semester the application will be totally self-contained.

2.2 Product Functions

Some of the functions that the application will perform are as follows;

- Identify a natural phenomena based on inputs
- Allow the user to take a photo to share on social media

2.3 User Characteristics

The intended users are assumed to have the following characteristics:

- User has a grade nine level education
- Users are aged at least thirteen years
- Users are familiar with using mobile applications
- Users have accounts with social media websites

These assumptions are made of the user because these are the characteristics of the indented audience of the application.

2.4 Constraints

Some of the constraints that have been put on the project are;

- Time: The project must be completed within the set time of the semester. Also the developers time will be split between the project and other course work for external classes.
- Budget: The project has a budget of zero dollars because it is a school project.
- Software: The application is restricted to run on the Android operating system. This is a constraint that is laid out by the instructor for the project.

2.5 Assumptions and Dependencies

The following assumptions are being made;

- Assuming that users have phones that run at least Android 4.0.
- Assuming that the user's phone has Internet access.
- Assuming that the user's phone has a build in camera.

The first assumption is to allow for the widest availability coverage. The reason for this is not all user will be running the same version of operating system. Building for the earliest allows for a wider user base. The second assumption is to ensure that the requirement for the use of Google Maps is met as well as allowing for the special feature of sharing the phenomenon on social media. The third assumption allows for the special feature of letting users photograph the phenomenon.

2.6 Apportioning of Requirements

Not Applicable

3 Functional Requirements

BE1. User wishes to access the application

VP1.1 User

i. User shall be able to download the application onto their smart phone. This operation will be handled by the operating system.

ii. User shall be able to open the application.

VP1.2 System Developer

i. Application shall be able to handle user input.

BE2. User wishes to take a picture and post it to social media

VP2.1 User

i. User shall be able to access the built-in camera on phone and its functionality from the application.

ii. User shall be able to save the picture to the application and the phone.

iii. User shall be able to post to social media directly from the application.

VP2.2 System Developer

i. Application shall have access to Internet via wireless connection from smart phone.

ii. Application shall have access to the built-in camera on the smart phone.

iii. Application shall have access to social media (Instagram)

iv. Application shall be able to save pictures directly to the phone.

v. Application shall allow users to post pictures of observed phenomenon.

BE3. User wishes to view and modify pictures from the application

VP3.1 User

i. User shall be able to view saved pictures through the application and the phone.

ii. User shall be able delete pictures from the application and the phone.

VP3.2 System Developer

i. Application shall display requested pictures to the user.

ii. Application shall be able to delete pictures directly on the phone.

BE4. User wishes to identify a natural phenomena

VP4.1 User

i. User shall be presented with options in which they can narrow down possible answers to "What is this?".

ii. User shall be able to post a picture on social media through the application to get feedback from friends to identify a phenomenon.

VP4.2 System Developer

i. Application shall provide the user with multiple-choice questions to identify a natural phenomenon.

ii. Application shall access the user's location using Google maps services to assist with identifying phenomenon.

iii. Application shall display the identified phenomenon on the interface.

iv. Application shall have access to the Internet via wireless connection from smart phone.

BE5. Software Developer wishes to swap expert

VP1.5.1 User

i. Not Applicable (Note: User should not see implementation)

VP1.5.2 System Developer

i. Application shall be able to switch "expert" modules in order to identify the natural phenomenon.

ii. Application shall allow the software developer to swap experts with other experts.

4 Non-Functional Requirements

4.1 Look and Feel Requirements

4.1.1 Appearance Requirements

Not Applicable

4.1.2 Style Requirements

Not Applicable

4.2 Usability and Humanity Requirements

4.2.1 Ease of Use Requirements

- The application shall be intuitively navigate-able for the intended users with minimal support.

4.2.2 Personalization and Internationalization Requirements

- The application shall be available in Canadian English.
- The application shall allow the user to use their personal Instagram account to upload images.

4.2.3 Learning Requirements

Not Applicable

4.2.4 Understandability and Politeness Requirements

- The application shall use symbols and words that are understandable to the intended user.
- The application shall not offend the user in any way.

4.2.5 Accessibility Requirements

Not Applicable

4.3 Performance Requirements

4.3.1 Speed and Latency Requirements

- The application shall respond to any user input within three seconds.
- The application shall allow the user to upload an image to their Instagram account within two minutes of initialization.
- The application shall receive the user's location within two minutes of initialization.

4.3.2 Safety-Critical Requirements

Not Applicable

4.3.3 Precision or Accuracy Requirements

- The application shall detect location according to the accuracy available within the Google maps API.

4.3.4 Reliability and Availability Requirements

- The application shall be available for use 24 hours a day, 364 days a year. One day will be reserved for updates and maintenance.
- The application shall be available on the Google Play Store for download.

4.3.5 Robustness or Fault-Tolerance Requirements

- The application shall alert user if Internet connection is not available.

4.3.6 Capacity Requirements

- The application shall be able to save as many photos as there is memory available on the device.

4.3.7 Scalability or Extensibility Requirements

Not Applicable

4.3.8 Longevity Requirements

- The application shall be able to operate with minimal maintenance.

4.4 Operational and Environmental Requirements

4.4.1 Expected Physical Environment

- The application shall be able to operate on any android mobile device.

4.4.2 Requirements for Interfacing with Adjacent Systems

- The application shall interact with Google maps in order to determine the user's location.
- The application shall be able to capture photos using the mobile device's camera application.

4.4.3 Productization Requirements

Not Applicable

4.4.4 Release Requirements

Not Applicable

4.5 Maintainability and Support Requirements

4.5.1 Maintenance Requirements

- The application shall require maintenance one day per year.

4.5.2 Supportability Requirements

- The application shall have a help menu for users.

4.5.3 Adaptability Requirements

Not Applicable

4.6 Security Requirements

4.6.1 Access Requirements

- The application shall only access the user's mobile device camera with permission.
- The application shall only access the user's Instagram account with permission.

4.6.2 Integrity Requirements

- The application shall not access folders on the user's mobile device that it does not have permission to.

4.6.3 Privacy Requirements

- The application shall not share the user's location without permission.

4.6.4 Audit Requirements

- The application shall share system data with the appropriate authorities upon audit.

4.6.5 Immunity Requirements

- The application shall not store the user's private information.

4.7 Cultural and Political Requirements

4.7.1 Cultural Requirements

- The application shall not offend any cultures.

4.7.2 Political Requirements

Not Applicable

4.8 Legal Requirements

- The application shall not break any existing laws.

4.8.1 Compliance Requirements

Not Applicable

4.8.2 Standards Requirements

- The application shall formally ask permission from the user when accessing other mobile device applications.

A Division of Labour

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