Software Requirements Specification

for

A.I. Customer Support Agent for Parks and Recreation’s website

Version 1.0 approved

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Los Angeles County Parks and Recreation

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# Table of Contents

Table of Contents..................................................................................................................<pg 2>
Revision History.....................................................................................................................<pg 4>
1. Introduction................................................................................................................<pg 5>
   1.1. Purpose...........................................................................................................<pg 5>
   1.2. Intended Audience and Reading Suggestions..........................................<pg 5>
   1.3. Product Scope...............................................................................................<pg 5>
   1.4. Definitions, Acronyms, and Abbreviations ..............................................<pg 6>
   1.5. References......................................................................................................<pg 6>
2. Overall Description......................................................................................................<pg 7>
   2.1. Product Perspective.......................................................................................<pg 7>
   2.2. Product Functions..........................................................................................<pg 7>
   2.3. User Classes and Characteristics...............................................................<pg 8>
   2.4. Operating Environment..............................................................................<pg 8>
   2.5. Design and Implementation Constraints..................................................<pg 8>
   2.6. User Documentation......................................................................................<pg 9>
   2.7. Assumptions and Dependencies.................................................................<pg 9>
   2.8. Apportioning of Requirements....................................................................<pg 9>
3. External Interface Requirements...................................................................................<pg 10>
   3.1. User Interfaces..............................................................................................<pg 10>
   3.2. Hardware Interfaces.....................................................................................<pg 10>
   3.3. Software Interfaces.......................................................................................<pg 10>
   3.4. Communications Interfaces.......................................................................<pg 11>
4. Requirements Specification.........................................................................................<pg 12>
<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Reason For Changes</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
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1. Introduction

1.1 Purpose

This product is an Artificial Intelligence (A.I) Agent designed to assist users of Los Angeles County’s Department of Parks and Recreation. The purpose of the program is to give users that require customer support an easier and better experience by incorporating an A.I agent that is able to answer and fill customer requests 24/7.

1.2 Intended Audience and Reading Suggestions

This document is targeted for developers, project managers, marketing staff, users, testers, and documentation writers, as well as Los Angeles County’s Department of Park and Recreation staff that maintains or updates the software.

1.3 Product Scope

The software to be produced is the LA County Parks and Recreation customer support A.I agent. This software will answer most commonly asked questions, provide information about a park, and provide an extensible framework for developers to add functionality to the agent. The software will be easy to use for users, and easy to maintain and upgrade by the staff which operates it. Once released, users will interact with the agent by sending strings and the agent shall respond with strings. The client will handle the matter in which to receive the input from the user to send to the agent. Client methods include a text input field and voice recognition technology. The client will also handle how to output the string to the user.

The agent shall process the string received through Natural Language Understanding modules, and will apply an appropriate backend process that will best fulfill the user request. After the request is processed, the Agent shall send a string back to the user informing them of the outcome, and tailor a dialog if needed in order to fulfill the user request. The advantages of following a modular procedure is that future extensibility is promised and it leaves the staff with
room to improve the agent in order to make it as efficient to the user as possible. Analytics to aid in this are also provided in the software.

1.4 Definitions, Acronyms, and Abbreviations

● A.I. - Artificial Intelligence
● A.P.I. - Application Program Interface
● G.C.P. - Google Cloud Platform
● LA County’s Parks and Rec - Los Angeles County Parks and Recreation Department
● N.L.P. - Natural Language Processing
● N.L.U. - Natural Language Understanding

1.5 References

● Google Documents
● Dialogflow API 2.0 Reference
● Mozilla MDN Javascript Reference
● Node.js Manual
● Google Maps GET Query Reference
● Rich Message Guide
2. **Overall Description**

2.1 **Product Perspective**

This A.I. Agent is in part a new addition to the Parks and Recreation Department’s existing website. It will appear as a widget on their current website which, when clicked, will open the agent to begin customer interaction. The agent communicates with the larger Parks and Recreation systems, so it is dependent on their database for accurate information. The agent itself is an independent module, however, and the interface shall allow multiple integrations across different platforms, such as Android or Google Assistant integrations.

2.2 **Product Functions**

The Agent shall be capable of answering commonly asked questions LA county’s customers have, with an emphasis on park relationships and information. The agent shall fulfill customer requests that are possible within defined user privileges, and possible through network sockets. These includes public database query searches through dialog, Parks and Rec reservations and/or cancellations, and feedback logging. The agent shall listen and respond to requests in order to interact with clients across different platforms. The software shall provide a client that is accessed through the LA County Parks and Rec website.
2.3 User Classes and Characteristics

- **User** - Only communication with the agent allowed. Communication is in the form of a Dialog.
- **Backend Viewer** - Is able to read data that the agent stores, such as analytic data and database reads.
- **Backend Trainer** - Same rights as the Backend Viewer and agent training through a provided dashboard is allowed.
- **Admin** - Is able to do Backend Trainer activities, as well as modify and extend the agent as pleased. Development experience is recommended.

2.4 Operating Environment

The operating Environment shall be a cloud computing service that manages and handles devops. This document offers little scope in details of hardware within distributed systems, however, it contains details about the services used and software dependencies that apply to the agent.

2.5 Design and Implementation Constraints

- **Google Recommended coding practices**: The software incorporates many google services and API’s that it is crucial to follow their practices for a smooth software implementation.
- **Server-Side Languages**: The software is a server-side program and therefore it is vital that a language tailored to server programs is chosen.
- Natural Language Processing Module: The software requires a widely available and well tested NLP module in order to decipher user strings into a user intent that must be fulfilled.

2.6 User Documentation
- Software Requirements Specification
- Software Design Document
- User Manual specific to a type of client

2.7 Assumptions and Dependencies
- GCP
- Google Dialogflow
- NPM Dependencies listed in Package.json

2.8 Apportioning of Requirements
3. External Interface Requirements

3.1 User Interfaces
There will be an icon on the homepage of the department’s website. Clicking the icon will open the user interface of the agent. The user interface is much like a simple message box. Type out responses to the bot or speak to it with a microphone. Speech will be initiated with a microphone icon next to the send arrow. Example:

3.2 Hardware Interfaces
The agent is designed to interact through the Parks and Recreation Department’s website, but can be also accessed by mobile devices through the Department’s mobile app.

3.3 Software Interfaces
The product connects to the Parks and Recreation Department’s Park Database in order for it to obtain the various park information. It will also interact with the department’s future reservation system. The various information, including the database information as well as the reservation data shall be shared between the systems and agent through Google Cloud Platform.
3.4 Communications Interfaces

The only requirement needed in order to communicate with the artificial intelligence is a web browser, as the Google App Engine takes care of most of the back end communications.
4. System Features

4.1 Give Park Information

4.1.1 Description and Priority

Deerbot shall give information to the user regarding all LA county recreational parks, and shall be able to answer all questions most users have regarding a park.

High Priority

4.1.2 Stimulus/Response Sequences

User asks agent a question regarding park information. Agent goes into the database and finds all the park information relevant to the question. It responds to the user with this information. Example: User asks which parks have pools, the agent will respond by giving them all the parks with pools.

4.1.3 Functional Requirements

User must have a working internet connection and have access to the Parks and Recreation Department’s website. If the A.I. does not understand what a user is telling it, it will ask the user to try again. If this happens three times, a fail-safe mechanism will activate and the A.I. will offer the user a phone number or email to receive direct support from a human.

REQ-1: Park Information
REQ-2: Park Reservations
REQ-3: FAQs

4.2 Make Park Reservations

4.2.1 Description and Priority

The agent will make use of the Parks and Recreation Department’s reservation system. It will allow users to make park reservation through a conversation and fulfill them.
All reservations involved: [http://reservations.lacounty.gov/](http://reservations.lacounty.gov/). The reservation website is under the process of being changed. Until they have changed it, it will give a link.

High Priority

4.2.2 Stimulus/Response Sequences

User asks the agent a question regarding reservations. Before the reservation site is updated, it will only give a link. After, the agent recognizes it and autonomously fills out the form through asking the user the questions that are on the form application.

4.2.3 Functional Requirements

<See 4.1.3>

- REQ-1: Park Information
- REQ-2: Park Reservations
- REQ-3: FAQs

4.3 Frequently Asked Questions

4.3.1 Description and Priority

The agent will be able to answer the Parks and Recreation Department’s Frequently Asked Questions.

Medium Priority

4.3.2 Stimulus/Response Sequences

When the user asks a question to the agent, it will be able to recognize that it is part of their FAQs and will give the appropriate response.

4.3.3 Functional Requirements

<See 4.1.3>

- REQ-1: Park Information
- REQ-2: Park Reservations
- REQ-3: FAQs
5. **Other Nonfunctional Requirements**

5.1 **Performance Requirements**

The agent will answer user statements in under a second 95% of the time, assuming there is a reliable network connection present. Scalability limits for the agent is specified by G.C.P., not this document.

5.2 **Safety Requirements**

No safety issues will be caused to users as a result of interacting with this A.I. Agent.

5.3 **Security Requirements**

Security protocols are present only for cases in which the agent is required to write to existing government managed databases. In such cases, it is assumed that there are extra layers security provided by L.A. County.

5.4 **Software Quality Attributes**

The qualities that the agent contains that aid both users and developers include the following:

- **Adaptability**: The agent can be adapted to be easily modified to be utilized in a variety of platforms, from desktop environments, to mobile devices.
- **Availability**: It is easily accessed directly from the Parks and Recreation Department’s website.
- **Maintainability**: Maintenance is handled primarily by G.C.P., and does not require dedicated developers for it to be properly managed.
- **Portability**: With the development of the Parks and Recreation Department’s mobile app, the agent can be integrated onto it to allow for portable use.
- **Reusability**: There is no limit to how often it can be used by customers.
- Usability: Simple User Interface allows for a wide range of users to be able to operate the agent

5.5 Business Rules
The agent is public facing, so there is no restriction on the usability of its features.
6. Other Requirements

Define any other requirements not covered elsewhere in the SRS. This might include internationalization requirements, legal requirements, reuse objectives for the project, and so on. Add any new sections that are pertinent to the project in this section.

This is pretty much a catch-all for things that do not fit in a previous section.

TDB
Appendix A: Glossary

Define all the terms necessary to properly interpret the SRS, including acronyms and abbreviations. You may wish to build a separate glossary that spans multiple projects or the entire organization, and just include terms specific to a single project in each SRS.

If this section is very short you may include it in section 1.4. If your list is very long you may include it here and put a reference to this Appendix in section 1.4.

TBD

Appendix B: Analysis Models

Optionally, include any pertinent analysis models, such as data flow diagrams, class diagrams, state-transition diagrams, or entity-relationship diagrams.

TBD

Appendix C: To Be Determined List

Collect a numbered list of the TBD (to be determined) references that remain in the SRS so they can be tracked to closure.

TBD