Software Requirements Specification

for

QRT BOT

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# Introduction

## Category

Mobile Application

## Purpose

This document will provide all of the requirements for the project QRT Chatbot, developed for the prediction of COVID-19 symptoms.

## Intended Audience and Reading Suggestions

This project is intended for users who want to check if they may have contracted COVID-19 by talking to the chatbot, as well as receive general tips to protect themselves and news about COVID-19. This chatbot can also chat with them to provide emotional support during the quarantine. This has been implemented under the guidance of college professors.

## Product Scope

The coronavirus disease 2019 (COVID-19) pandemic may be stressful for people. Fear and anxiety about a new disease and what could happen can be overwhelming and cause strong emotions. Our project aims to effectively solve this problem using Machine Learning and Natural Language Processing. Our application takes input from users to determine if they have developed any telltale signs of positive COVID-19 and takes appropriate actions. This is done by analyzing the user input and trying to see if the user has developed any obvious symptoms of COVID-19. It can also be used to chat while being in quarantine, as a substitute for usual physical social interactions. The goal is to create a comfortable user experience where the user does not feel any lasting emotional impact from the isolation caused due to COVID-19.

## References

Websites and Research Paper

<https://ieeexplore.ieee.org/abstract/document/9137944>

<https://www.nature.com/articles/s41598-020-75912-x>

<https://www.nature.com/articles/s41746-020-0280-0>

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# Overall Description

## Product Perspective

* + 1. **Existing System**

* One of the existing systems is used to assess symptoms and risk factors for people who are concerned they might get infected.
* It suggests what action they should take, and provide information on how to safely manage at home.

**2.1.2 Proposed System**

* In this project, we incorporate sentimental analysis along with features of the existing system.
* It is necessary to understand the users’ state of mind to recognize and manage stress during this quarantine period.
* Hence we are implementing a system that predicts the various symptoms related to Covid-19 and the emotional state of the user and further reports to the health department.

## Product Features

* Make the users be aware of all the possible symptoms related to novel coronavirus.
* Speculates if the user might have been infected by the disease and informs the health department and family.
* Also predicts the users’ state of mind

## User Classes and Characteristics

Users of the QRT chatbot should be able to receive appropriate responses depending on the type of consumer. In the case of the average end-user, they will be able to chat with the chatbot for COVID-19 related queries, or for emotional support. The data collected from users will be provided to the health department in case there is a high chance of a positive COVID-19 result.

## 2.4 Operating Environment

**Operating System Server: Android**

# External Interface Requirements

# **3.1 Software Interfaces**

**Development Tools:** Dialogflow and Android Studio

**Programming Language:** Python

## 4. System Features

## 4.1 Description and Priority

This project has a high priority because in this pandemic situation it is necessary to detect the ones with various Covid-19 symptoms in order to take the requisite actions.

**4.2 Functional Requirements**

## 4.2.1 Admin Interface

This is the user interface module where the user needs to login to the mobile application with a valid user ID and password. Users' mail ID, health status, and contact details will be stored in the database. The health status and the emotional status of the user is predicted and send to the health care in case of high-risk severity.

**4.2.2 Data Pre-processing and Feature Extraction**

The user’s reply is taken as input from the chat. Then preprocessing and feature extraction are done followed by which the features are used to train the model using machine learning algorithms. Then the sentiment polarity of the user is predicted according to which corresponding actions are taken.

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### 4.2.3 Inform Health Authorities

### This is the module where the healthcare is informed about the health condition and emotional state of the user if there is a high-risk severity. If the severity is low preventive measures are recommended.

## 5 Other Nonfunctional Requirements

## 5.1 Performance Requirements

The system should correctly predict whether the user is affected by Covid-19 or not and must inform the healthcare if the severity is high. The system should also try to reduce incorrect predictions.

## 5.2 Safety Requirements

A user’s identity is verified by username and password before any information requested can be provided.

## 5.3 Security Requirements

The conversations between the chatbots and users are encrypted. The personal information of the user is not shared with any third party only health care can access the personal information of the user.