

COVID-19 INFORMATICA CHATBOT

Name: Rishabh Singh Parihar

Project ID: SPS_PRO_99

Project Title: Intelligent customer Help
Desk with smart Document Understanding

ACKNOWLEDGEMENT

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Nobody has been more important to me in the pursuit of this project than the members of my family. I would like to thank my parents, whose love and guidance are with me in whatever I pursue. They are the ultimate role models.

PROJECT REPORT

Purpose of Document:

This document provide all of the requirements for the project "**Intelligent customer Help Desk with smart Document Understanding**". The chatbot title is "**COVID-19 Informata**". Here , visitor of this chatbot will ask their queries related to Corona virus and they will get the information about it.

Project Scope:

COVID-19 Informata is an AI chatbot that receives questions from users, tries to understand the question, and provides appropriate answers. It does this by converting an English sentence into a machine-friendly query, then going through relevant data to find the necessary information, and finally returning the answer in a natural language sentence.

In other words, it answers your questions like a human does, instead of giving you the list of websites that may contain the answer. For example, when it receives the question "**What is Corona virus?**", it will give a response "**Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.**

Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face."

The main objective is creating a Web API, and sample web, mobile, and text messaging interfaces that demonstrate the use of the API. The goal is based on 'Intelligent customer Help Desk with smart Document Understanding.'

Overview of Document

| | |
|---------------------------------------|---|
| Project Name | COVID-19 Informata |
| Date of provision | May 11, 2020 |
| Based on | Intelligent customer Help Desk with smart Document Understanding |
| Time taken in making a project | 8 days |
| No. of member(s) in a team | 1 (Rishabh Singh Parihar) |
| Introduction | Provide an overview of the application, explain the objectives and goal of the project and describe the document structure. |
| Overall Description | Provide the specification of the system model, the classes model and the main constraints. |
| Functional requirements | Provide the analysis of the functional requirements by feature. |
| Software requirements | Provide the analysis of the software requirements by feature. |

Introduction

When a user enters a query, the query is interpreted as keywords and the system returns a list of highest ranked web pages which may have the answer to the query. Then the user must go through the list of webpages to find the answer they are looking for. This chatbot, however, will try to understand the query and provide a definitive answer.

There will be four main units to the system working together to understand the question

and return an appropriate answer:

General question construction - capable of taking a natural language question and making it more generic.

General answer construction - capable of taking a generic question template and providing a generic answer template.

General answer population - capable of taking a generic answer template and populating it with information from the database to form an answer.

Information extraction - capable of finding information through structured or unstructured websites, and storing that information in a database.

Overall Description

- **Chatbot features**

The major features for COVID-19 Informata Chatbot will be the following:

Web API: An API call will include a question in the form of a query string URL parameter and the service will reply in JSON.

Natural Language Processing: The system will take in questions written in standard English.

Natural Language Responses: The answer to the question will be written in standard and understandable English.

Information Extraction: There will be a database containing all the information needed, populated using information extraction techniques.

Mobile app/Web app/SMS users : These users consist of non-technical users who want to get answers for their questions. These users ask questions and get answers with mobile, web, or text messaging interfaces.

Functional Requirements

Generic Question Construction

1) Input & Output Format

- This unit will receive a text string from the URL parameter.
- This unit will identify important words in the sentence and replace them with general representations preceded by an escape character.
- This unit will output the sentence as a string, as described in above point.
- This unit will output a map of general representations to the words they replaced.

2) List of General Representations

- This unit will have a list of general words related specifically to potential queries .

3) Error Handling

- An error during this process means there was a problem parsing the sentence and creating the general question. In this case, return a message such as "Sorry, I didn't understand that."

General Answer Construction

1) Input & Output Format

- This unit will receive the output sentence from the General Question Construction unit as input.
- This unit will generate a general answer sentence using the input.
- This unit will output the general answer sentence described in above point.

2) Error Handling

- If there was an error here, then the unit failed to create a generic answer given a general sentence. In this case, simply fallback to the error handling described in first point of error handling of topic General Answer Population.

Generic Answer Population

1) Input & Output Format

- This unit will receive as input a mapping from the General Question Construction unit .
- This unit will receive as input a generic answer from the General Answer Construction unit .
- This unit will query the database for data about the elements in the mapping.
- This unit will replace the representations in the general answer with data.
- This unit will output the answer to the original question, as described in third point above.

2) Error Handling

- If querying the database did not provide an answer, the system will say that it does not have an answer and provide appropriate website link where the user could find the answer.
- If the system could not find appropriate website associated with the question, the system will return a generic error message such as "Sorry, I couldn't find an answer to that."

Software requirements

- IBM cloud
- Node-RED starter application
- IBM Watson Assistance
- IBM Cloud Functions
- Python

Working Diagram



