AI CHATBOT TO ANSWER FAQS FOR VISA ENQUIRIES

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Abstract
There have always been queries of people, tourist and travelling enthusiast about getting visa of different countries and other support documents, much of which is quiet hectic process: to stand in queues getting the right information. In order to make this process fast FAQs can be answered using latest AI technologies like Dialogflow based on Natural Language Processing. Also, every new question can be stored thus improving the database for better answers.

Introduction of the Project
With the advent of computer everyone's life getting easier. Today's generation computer has cognitive technologies, they too provide automation which ultimately saves time. A FAQ chatbot is a program which answers common questions. Dialogflow translates end-user text or audio during a conversation to structured data that your apps and services can understand. You design and build a Dialogflow agent to handle the types of conversations required for your system. A Dialogflow agent is like a human call center agent.

Objective
Our objective is to design and prototype a smart FAQ chatbot which can respond to all support related enquiries 24x7 based on FAQ database effectively for visa applicants and travel guides. The main goal is to design a website which uses Dialogflow to answer all questions and stores the new questions in database.

Scope
Chatbots are artificial intelligence systems that interact with users via messaging, text, or speech. Chatbots can work in segments such as marketing, payments and processing, and service. Today, consumers are demanding round-the-clock service for assistance in areas ranging from banking and finance, to health and wellness.
As a result, companies are rapidly looking to develop Chatbots and virtual assistants to answer questions customers may have at any time of day. But companies should take note that the more successful Chatbots are the ones that are able to drive a good conversational experience that mimics human agents – they should be able to effectively address customer requests.

Study of Existing System

Name of Chatbot	Strengths	Weaknesses
ELIZA	First ever chatbot to be built.	Was a mere caricature of human conversion
Parry	It is a natural language program that resembles thinking of an individual.	Was a very complicated system worked on assumptions, attributions, and emotion responses.
A.L.I.C.E.	The program works with the XML schema known as artificial intelligence markup language (AIML), which helps specify conversation rules.	A.L.I.C.E. uses old pattern matching technology.
Siri	• Record Keeping • Calling and emailing • Problem Solving • Setting Reminders • Note-taking • Opening Apps • Cheating	• Lack of function • Does not play well with children • Has privacy issues • Has not been very available • There are other simpler and better options out there
Google Assistant	• Aesthetic in design • Hands-free calling • Knows your voice • Multiple languages • Builds social connection	• Requires internet connection • Mediocre sound quality • Only a few controls option

Project Description

In our project, the method of creating a chatbot is quite simple. First, a list of questions is stored in the Dialogflow agent with multiple similar questions linked together. This way when the user visits the website, it does not have the hassle to search for questions. The user is greeted with a “Hello!” message. Further, user is allowed to type any desired question, if the question is one that matches in the existing database, then that question is popped up on the user screen, although if the question is not previously stored in the database, the database gets updated with the new question which is then answered by a person operating Dialogflow at the backend.

Methodology

In our project, we are using Dialogflow which is a natural language understanding platform by Google. Step by step procedures of setting up Dialogflow are as follows:

- Create an agent
  - Open Dialogflow console and then sign in to your account.
  - In the console, from the left pane, click Create new agent.
  - Type the name of the new agent. Under the Google Project section, associate an existing Google project to the Dialogflow agent. If you leave the Google Project field empty, Dialogflow V2 automatically create a Google project.
  - Click Create to create the Dialogflow V2 agent.
- Import the Dialogflow agent
  - In the Dialogflow console, click the Settings icon and then click Export and Import.
  - Click Import from Zip to import your bot to the Dialogflow console.
  - Click the downloaded NLP bot. The Upload agent dialog box opens.
  - Type Import in the specified field, and then click Import.
  - Click Done to complete the importing process.
  - To verify whether the bot has been successfully imported, go to the left pane, and click the Intents tab. Check whether the required sample intents have been added to the agent.
- Create a Google service account and private key
  - In the Dialogflow console, open the Settings menu and click the Service Account link associated with the Dialogflow agent. The Google Cloud Platform console appears.
  - In the console, from the left pane, click Service Accounts and then click Create Service Account to create a new service account.
  - Under the Service Account Details, add a name and description for the created service account.
  - Click Create to create the service account.
  - After service account has been created, you must grant the service account access to your project. Under the Service Accounts Permissions section, click the select a role drop-down list box and then select the Dialogflow API Admin option.
  - Click Continue
  - Under the Create key section, click + Create Key to create a new private key. This private key enables you to access the Dialogflow agent from the chatbot framework.
  - Select JSON as the key type, and then click Create to download and save the private key to your computer. A dialog box shows up confirming that the private key has been downloaded, click Close.
  - Click Done save the service account changes in your console. The download file contains information about the service account and private key.

Further, JavaScript is used along with Node.js to integrate the Dialogflow agent to front-end page.

Expected Outcome

The designed FAQ Chatbot is very simple and user friendly. It is not very complicated like other Chatbots. The working of the Chatbot is straightforward and can be easily understood. This FAQ Chatbot uses simple pattern matching to represent the input and output whereas other Chatbots use input rules, keyword patterns and output rules to generate a response. If the input is not found in the database, a default response is generated. The input and output can be customized according to the user. Based on the developer or the user, the required requests and responses can be stored in the database. If the customer needs real human help, the Chatbot can also transfer them over to a human support agent by email. This FAQ chatbot can be used in any kind of FAQ operations just by changing the dataset.

Resources

Hardware Resources:

- x86 (32-bit) or x64 (64-bit) Processing System

Software Resources:

- Any operating system
- Any web browser

Limitations

- Chatbots do not understand human context
- They do not make customer retention
- They cannot make decisions
- They have zero research skills
- Chatbots have no emotions

Conclusion

The designed FAQ chatbot is very simple and easy to use and is user-friendly. It is not very complicated like other chatbots. The working of the Chatbot is straightforward and can be easily understood. This FAQ Chatbot uses simple pattern matching to represent the input and output whereas other Chatbots uses input rules, keyword patterns and output rules to generate a response.

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