Artificial Intelligence Based Career Guidance Chatbot

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Abstract: *Chatbot is a software application which is used to initiate a conversation using either text or speech with the users. It can simulate the way exactly a human behaves as a conversational partner. Generally, bots need continuous training and testing. Let us know what a bot exactly is, A bot is that it is programmed to do certain tasks. Bots often imitate or replace human user's behaviour. They can do the tasks much faster than human users could. There are different bots such as chatbots, Web Crawlers, Social bots, malicious bots etc. whereas every bot has its functionality. Chatbots are that simulate human conversation by responding to certain phrases with programmed responses and Web Crawlers are the bots that scan content on webpage all over the Internet. Social bots are the bots that operate on social media platforms and malicious bots are the bots that spread spam content or carry out credential stuffing attacks. Career guidance chatbot is built for students who are confused to choose their career. Generally, there are many websites which provide information about different careers but many of the students have to wait for the response of the career counsellors to answer their queries. This chatbot helps the students to get information about different professions at any time without any help of a career counsellor as the chatbot itself acts as a career counsellor and can answer the user at any time.*

Keywords: Chatbot, Artificial Intelligence, Android, Dialog Flow.

1. INTRODUCTION

A Chatbot is an automated program that interacts with users like a human would and cost little to nothing to engage with. It attends to customers at all times of day and week and are not limited by time or any physical locations but with an internet service. The chatbot works with artificial intelligence which aims to influence software with the ability to analyze using either predefined rules and search algorithms or pattern recognizing machine learning models and makes a decision. There exist four distinct Categories of Artificial Intelligence such as [1]Reactive AI which can only react to the existing situation but not past experiences or already existed.[2]Limited Memory AI relies on stored data to learn from recent experiences to make decisions. [3]Theory of Mind AI, which is capable of comprehending conversational speech, emotions, non-verbal signals and other conscious examples. [4]Self Aware AI which consists of human-level consciousness with its desires, goals and objectives. Natural Language processing is how to process and analyze large amounts of data. Based on the human language the processing will be done and the results are provided. Now-a-days chatbots have become part of life and are using in many fields as assistants to help about the services. This application is designed for the students who want to know the information regarding different professions and would take decisions which help them to succeed in their life and follow their passion.

2. EXISTING SYSTEM

There are many websites which provide career-related information but it is not helping a student to select their career. Many students do not have the clarity to choose their career and adjust themselves with the courses, which they know or most of the people do and satisfy themselves or behave according to the situations. Every student wants to have expert advice to make their career bright but many of the websites need some subscription or charge some amount to interact with the experts which may not be affordable by all the students. In this situation, the student will compromise their career and will join in any of the courses.

3. PROPOSED SYSTEM

In the proposed system we have developed a chatbot which answers the queries of the users regarding various professions and courses whereas there are many chatbots for various purposes. We have chosen this as it helps many of the students for having some knowledge regarding different professions and follow their passion. Let us see the architecture diagram of the project in figure.1 where the user sends the expression either as a text/voice and a query is established and it matches with the corresponding intent and generates a response to the user where the information is displayed on the user interface.

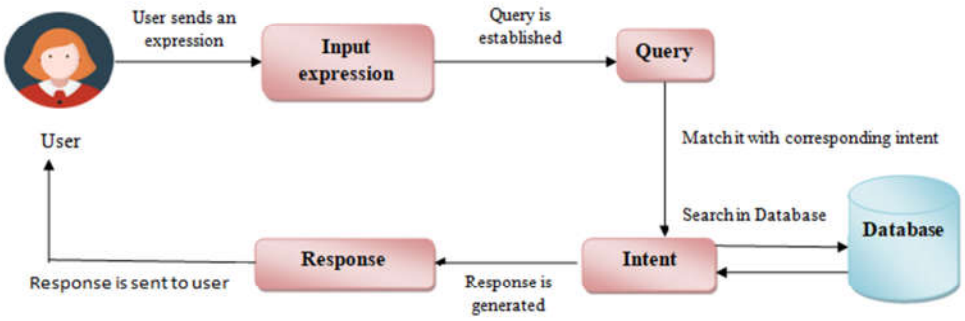

Fig 1.Architecture Diagram

4. IMPLEMENTATION

In the implementation of this chatbot application, we used Dialog flow as the framework of the bot.

Dialog Flow: It is a framework which makes the closed domain chatbot development easier with friendly features, where a closed domain chatbot is one of the ways to develop the chatbot with a particular task or a certain specific task. A closed domain chatbot is generally called as scripted bot as it cannot answer the queries which are not predefined or existed. Closed domain bots are with the conversational flow so that when a user asks a question, the bot responds with an existed script from the library. It is a natural language platform used to integrate a conversational user interface into mobile apps, web applications and so on. It is initially known as API.ai. It provides tools to developers building applications. Dialog Flow is a Google service that runs on Google Cloud platform which can analyze multiple types of input from the users including text or voice. It can also respond to the user in the way they query the bot. Generally, a traditional computer interface requires structured input to function properly which makes these interfaces difficult to use. But based on the natural language processing users can use their language which need not follow all the rules of a structured language helps the user to converse with the chatbot effectively. For example, a question can be asked in two or more different formats i.e

*what are the courses after 10th?

*courses after 10th?

*What are the possible courses after 10th?

The questions may be different but the meaning of these questions is the same. Let us know some key concepts we have to know in particular while working with dialog flow.

Agents: A Dialog Flow agent is a virtual agent which handles the conversation with the end- users. It is a natural language understanding module that understands the meaning of human language. The trainer train the agent both to handle expected conversation scenarios and the training does not need to be overlay stated clearly.

Intents: Intent is a specific action that the user can invoke by using the defined terms in the console. For each agent, you can define many intents, where the combined intents can handle a complete conversation. Dialog flow matches the end user expression to the best intent in the agent. Matching intent is known as intent classification.

Training phrases: These are the example phrases for what users might say. If any of the user expression resembles the existing phrases, the dialog flow matches the intent. It is not necessary to define every possible example as Dialog flow built in machine level.

Responses: These may provide the end-users with answers; ask the end-user for more information or terminate the conversation.

Entities: Entities tell exactly how data from an end-user expression is extracted. It defines system entities that can match date, time, colors and we can create own entities like different professions with a career as an agent.

Context: Using contexts, you can control the flow of a conversation when an intent is matched the configured output contexts for that intent become activity.

Events: Events are used to trigger intents. Events can be of platform-dependent or custom events as the platform -dependent events are triggered by user activity on the output channel associated with dialog flow and custom events are defined for a specific use case and are not dependent.

Fulfillment: When you enable fulfillment for intent, Dialog flow responds to that intent by calling a service that you define. When an intent with fulfillment enabled is matched, Dialog Flow sends a request to web hook service, the information about the matched intent then the application can perform any actions and respond to dialog flow with the information how to proceed.

Integration: Dialog Flow integrates with many popular conversation platforms like Google Assistant, Slack and Facebook messenger etc. In this paper, we can know how it is integrated into an Android platform.

Android: Android is a mobile operating system based on open-source system software, designed primarily. The chatbot will be initiated using the on Create() method of the Android activity where the agent can be configured using a client Access Token which is a unique ID which helps the bot ready to communicate with the user.

Flow Chart: The flow diagram of the chatbot is described as fig2 and is shown as below. where the user has to register into the bot with some credentials and then login into the application and can converse with the bot with their queries and if any of the non-existing queries are present then it generates a default response and stores the query in the database as it helps to train with lot more queries for the developer next time.

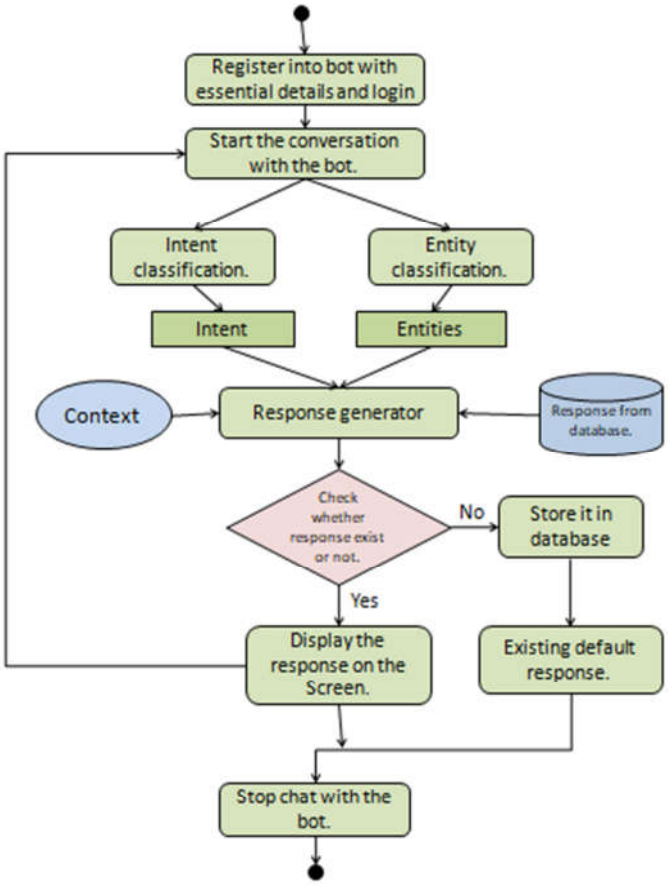

Figure 2. Flow diagram

5. CONCLUSION

This Chatbot helps mainly students effectively by providing the information related to many professions such as pilot, fashion designer, architect, fashion designer etc. the user gets relevant information based on the intents present in the dialog flow and the appropriate answer is found then the response is displayed on the application interface. Based on the data set present in the database, the responses will be provided to the user.

6. FUTURE ENHANCEMENT

In this paper, we discussed the chatbot which is integrated into an Android platform and it can be further extended to other platforms like IOS. This chatbot answers the queries related to the different professions and some courses and it can be extended to the information related to the colleges, jobs and the information related to different common entrance tests. At present, the bot will converse only in Standard English and it can be further extended to the different languages like Telugu, Tamil, Hindi, Malayalam etc.

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