ChatBot Using Google Dialog Flow

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Abstract— Humans are constantly fascinated with auto-operating AI-driven gadgets. The latest trend that is catching the eye of the majority of the tech industry is chatbots. And with so much research and advancement in the field, the programming is winding up more human-like, on top of being automated. The blend of immediate response reaction and consistent connectivity makes them an engaging change to the web applications trend. A chatbot (sometimes referred to as a chatterbot) is a computer program that attempts to simulate the conversation or "chatter" of a human being via text or voice interactions. A user can ask a chatbot a question or make a command, and the chatbot responds or performs the requested action.

This work is about implementing a chatbot for education institutions, primarily on mobile and gadgets using google dialog flow. This work helps student enrolment's and to know more about the university and their offerings. This automatically makes instant messaging their preferred channel of communication, even when it comes to seeking support with an issue, or information about a program they would like to join. The average preference for instant messaging makes it highly beneficial for universities and colleges to create a chatbot to boost interest and enrolments in their course

Keywords—Agents, Chatbot, Dialogflow, Entities, Intents, Webhook

I. INTRODUCTION

In recent years, there is a lot of buzz about AI-based developments which promise to revolutionize both teaching and learning. But these futuristic entities aren't the only education chatbot examples you can find. There are several very realistic applications of chatbots in universities, and whether you offer online courses or run an institute with a conventional campus, which can be made good use of them. The key to understanding how chatbots can benefit universities and colleges lies in understanding what sets your target audience apart. Students, at every stage of their academic lives, are a concerned lot. They're making important decisions in their lives, decisions that will pave the way for their future. Students want to be sure that the course they finally choose is the best fit for their academic and professional interests, their budget, and other logistical preferences. And they have a hundred different university websites to consider.

Let's imagine one such student, a computer science graduate looking to pursue higher studies in Machine Learning, but unsure about the exact course or subject they should specialize in. They can visit the college or university website as part of their research, glance through all the courses the college offer, and browse the FAQs. But they've already done that on all the other websites they have visited. Instead, by taking a different route and help the student feel comfortable on the website. This is where the education chatbot comes in. The AI bot greets the student, asks them about their background, and sends them details of the students programs they're eligible for via email. The student, in turn, can ask the chatbot how long a certain course is, the subjects it covers, or whether it includes an internship, and get instant answers you can even go a step further and create a chatbot that takes custom inquiries from the student, and passes these on to the experts who can then send the student an email with clarifications. In any of these cases, the chatbot gives the student the experience of being able to talk to someone, which feels like a welcome change after weeks of solo research.

There are several other ways in which you can create an education chatbot to improve the user experience of the institute website, here we are using google dialog flow to build the chatbot. Dialogflow is an end-to-end, build-once deploy-everywhere development suite for creating conversational interfaces for websites, mobile applications, popular messaging platforms, and IoT devices. You can use it to build interfaces (such as chatbots and conversational IVR) that enable natural and rich interactions between your users and your business. Dialogflow Enterprise Edition users have access to Google Cloud Support and a service level agreement (SLA) for production deployments.

II.　PROPOSED WORK

The proposed solution aims at building a comprehensive chatbot using google dialogflow for the Educational institutions

▶ The Chatbot secures a higher number of registrations and helps with admission. Engage potential students online with the chatbot. Answer their questions 24/7, help with dilemmas, and information about the campus, facilities, scholarships and enrollment. Integrate the chatbot with your CRM and send student leads directly into your recruitment process.

▶ Connect your students with the university 24/7 from their desktop and mobile. Use the Chatbot to support your students and provide instant answers for campus services, enrollment, scholarships, learning services, advice about exams, IT services, troubleshooting and more. The Chatbot A.I. machine learning helps it learn new questions from conversations with real students. Declare an "action day" to encourage voluntary measures to reduce air emissions, such as using public transportation.

▶ Online chatbots to show the students the directions. Bots ensuring constant communication addressing a wide variety of student needs. Students get 24/7 automated guidance for e-forms, applications, campus facilities, campus locations, technical problems and more.
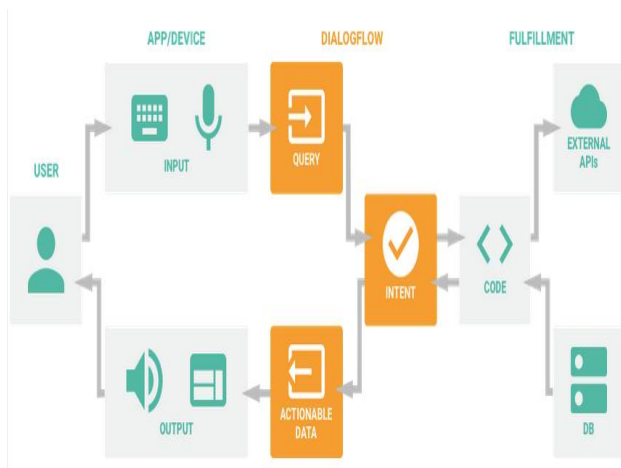
III.　METHODOLOGY

Fig. 1 Proposed design

DialogFlow uses intents, entities, actions with parameters, contexts, speech to text, and text to speech capabilities, along with machine learning that works silently and trains your model. DialogFlow has built-in knowledge on topics like casual talks, weather, and wisdom. It means we don't have to train the agent for these intents. DialogFlow returns the output as JSON data.

Agents are best described as NLU (natural language understanding) modules[2]. These can be included in your app, product, or service and transform natural user requests into actionable data.This transformation occurs when a user input matches one of the intents inside your agent. Intents are the predefined or developer-defined components of agents that process a user's request.
Agents can also be designed to manage a conversation flow in a specific way. This can be done with the help of contexts, intent priorities, slot filling, responsibilities, and fulfillment via webhook. [3]

User can provide input using the user interface provided using web interface by typing the questions or words and also using speaker which converts text to speech as an input

Whenever the user ask a question, it will try to match in corresponding Intent. Intent plays vital role in the assistant app. In Dialogflow, an intent houses elements and logic to parse information from the user and answer their requests. To understand the question better by intent we (developer) need to feed as much as data we can. The more variations added to the intent, the better the agent will comprehend the user. Developer need to think of different variations of same question. A core component of chatbots is intents.

Dialogflow backed by Google hence it works on cloud functions. When you need to add some custom code you can do it under the fulfillment tab. Fulfillment is where your custom code goes and bind your intent to cloud functions
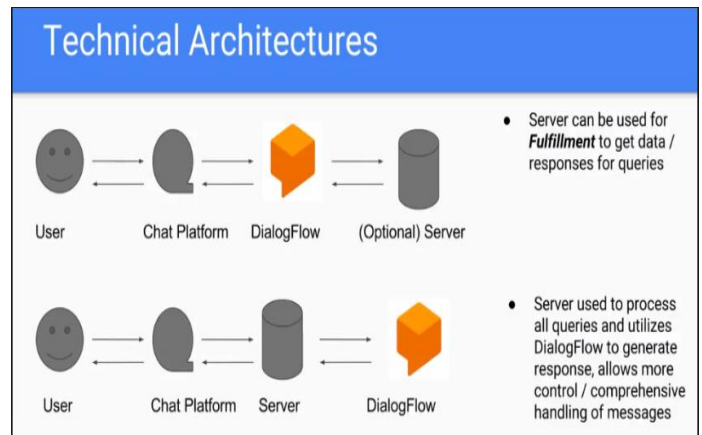

Fig. 2　Technical architecture of the proposed system

To start with we need to add create an agents[3]. Agent is the name of your app which we are creating as shown in fig-3. The name of the agent is very important. Creating an agent is pretty standard, fill out the form and hit create choose a name for the bot and the default time zone. Out bot name is Guru
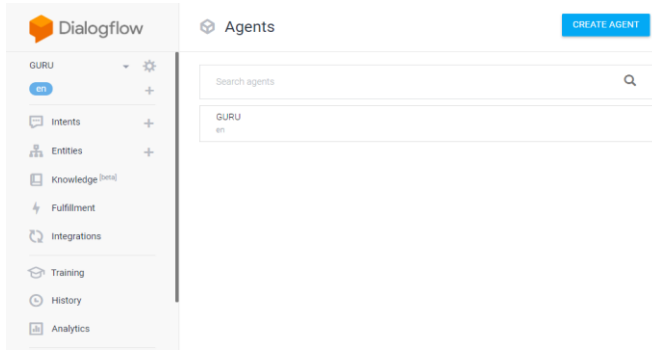
Fig .3 Creating an agent

Next step is to create intent, whenever the user ask a question, it will try to match in corresponding Intent. Intent plays vital role in the assistant app. In Dialogflow, an intent houses elements and logic to parse information from the user and answer their requests. To understand the question better by intent we need to feed as much as data we can. The more variations added to the intent, the better the agent will comprehend the user. Developer need to think of different variations of same question. A core component of chatbots is intents. Clicking on the Intents item in the menu, you can see any existing intents in fig-5 and fig-6 a sample intent creation
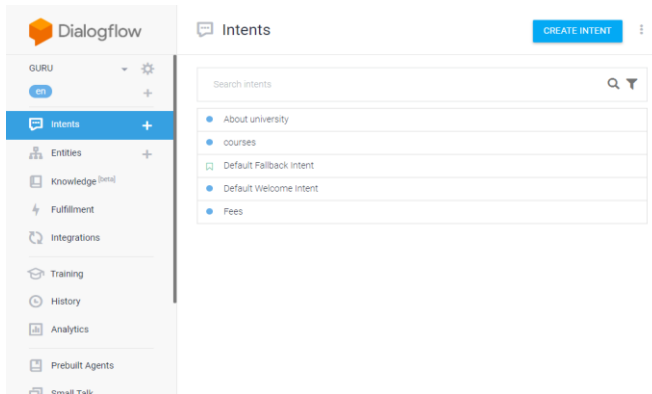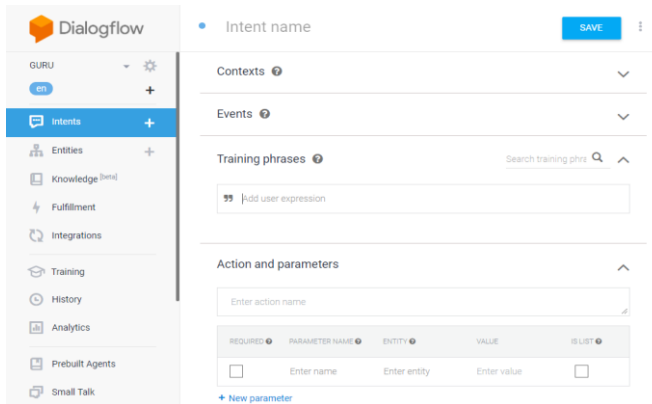

Fig. 5 Existing Intents

Fig. 4 Creating an sample intent

The Dialogflow agent needs to know what information is useful for answering the user's request. These pieces of data are called entities. When setting up your agent, it's best to define your entities prior to adding the training phrases to your intents. This will ensure the correct words are annotated when the training phrases are supplied and entities can be added as shown in fig-7
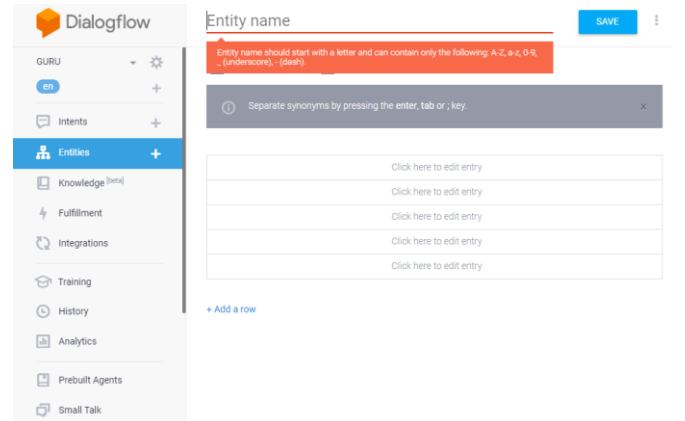

Fig. 6 Adding Entities

To fulfil the action triggered by the user to fulfil the intents programatically and using external API's is called as Fulfilment .
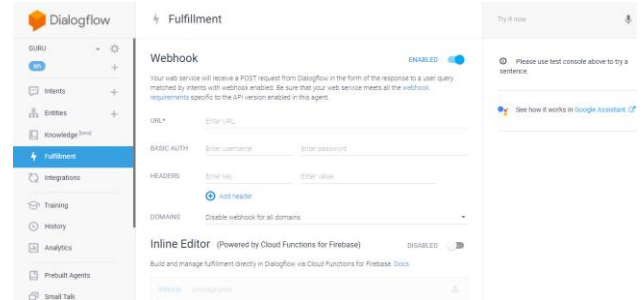

Fig. 7: Enabling Webhook for intent fulfilment

As you can see in Fig. 7 we need to enable the webhook and provide external API url which will be triggered appropriately for the intents added.[6]

IV RESULTS AND DISCUSSION

The application is deployed and tested with sample intents and entities, below are few screenshots of conversational interaction with chatbot GURU
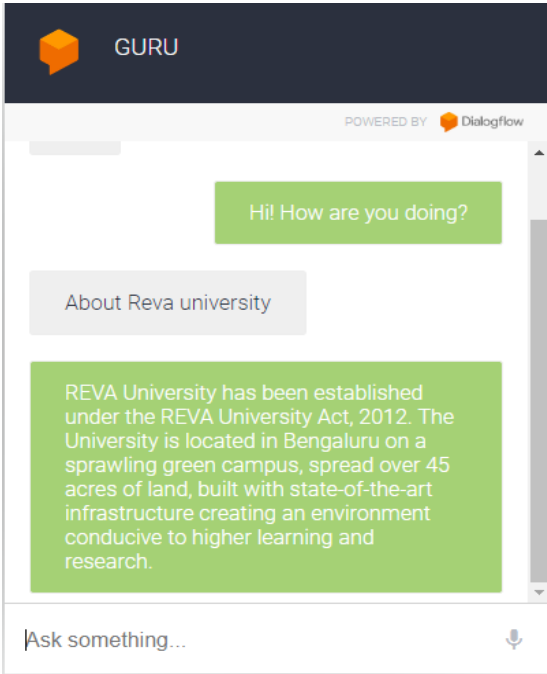
Fig. 9 Shows that the model identifies the intent and then reacts based on that intend which is pre loaded
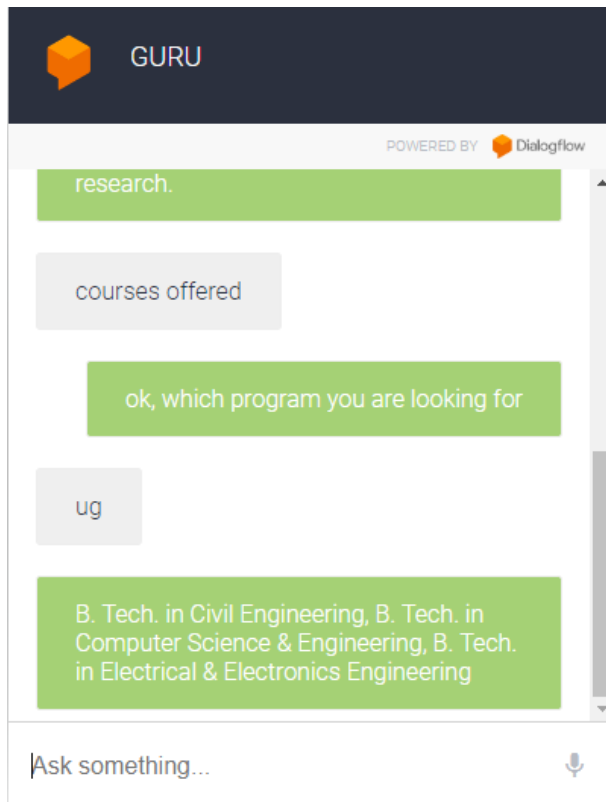

Fig. 8: Shows that the model identifies the intent and then reacts based on the fulfilment

Building a Chatbot needs highly professional programming skills and experienced developers to achieve even a basic level of realism [7]. The complexity of building chatbot platform as compared in the referred paper building chatbot using google dialog flow gives extendibility across many external platform using webhooks for the better fulfilment of intents added using other methodologies.

V.CONCLUSION AND FUTURE SCOPE

This solution when deployed can be used by the universities to add more conversation to support student to have more knowledge on education institutions to choose their career which can be used as an ideal communication. Answers to student questions can easily be added to the chatbot's script, and instantaneously dispensed to hundreds of applicants. Information gaps can reduced between students who are enrolling to universities. Queries about assignment submission and evaluation, and general questions about campus life can also be added as future enhancements.

- ► Below technical future enhancements planned for the chatbot app
- ► Building an Data Logging and Enhanced Speech Models
- ► Integrate with more platforms
- ► Bringing ML classifications threshold

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