

# Chatbot for University Resource Booking

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## ABSTRACT

Chatbots are programs that mimic human conversation using Artificial Intelligence (AI). It is designed to be the ultimate virtual assistant, entertainment purpose, helping one to complete tasks ranging from answering questions, getting driving directions, turning up the thermostat in a smart home, to playing one's favorite tunes etc. Chatbot has become more popular in business groups right now as they can reduce customer service cost and handles multiple users at a time. But yet to accomplish many tasks there is need to make chatbots as efficient as possible. To address this problem, in this paper we provide the design of a chatbot, which is efficient and timesaving in booking University/Institution resources like auditoriums, seminar halls, projectors etc which is built using Dialogflow, Nodejs, and PostgreSQL. This chatbot can be used by any University/Institution to book resources.

**Keywords :** Chatbot, Dialogflow, Nodejs, and PostgreSQL.

## I. INTRODUCTION

Today's era is having many web-based services like Ebusiness, Entertainment, Virtual assistance and many more. There is a drastic increase in the world of web service, where everything is now getting associated with the web. It is a very user-friendly approach to avail everything to the doorstep. There are different types of customer service available like live chat support service, phone(telephone) services. But for all such support services provided by the human to human takes time to answer customers query. As the number of clients increases the waiting time increases as well, which results in poor client satisfaction.

It is an assistant that communicates with us through text messages, a virtual companion that integrates into websites, applications or instant messengers and helps entrepreneurs to get closer to customers. Such a

bot is an automated system of communication with users.

Online chatbots save time and efforts by automating customer support. Gartner forecasts that by 2020, over 85% of customer interactions will be handled without a human. However, the opportunities provided by chatbot systems go far beyond giving responses to customers' inquiries. They are also used for other business tasks, like collecting information about users, helping to organize meetings and reducing overhead costs.

One of the important goals in the field of Human Computer Interaction (HCI) is the outline of normal and instinctive connection modalities. Specifically, numerous endeavors have been committed to the improvement of frameworks to communicate with the client in a characteristic language [1]. Computer based chatbots are getting to be distinctly famous as

an intuitive and successful open framework between human and machines. The chatbot is a manufactured substance that is intended to reproduce a clever discussion with human accomplices through their regular language. Currently, chatbots are utilized by a great many web clients to intercede access to information or learning bases and furthermore to do nonspecific discussions [2].

## II. METHODS AND MATERIAL

### A. Dialogflow

DialogFlow is a tool that does NLP and can be used to detect keywords and intents in a user's sentence. Its role is to help to build chatbots using Machine Learning. All you need to do is provide a set of sentences a user could potentially say, highlight the parameters you want to retrieve and let DialogFlow do its work.

#### (i) Agent

DialogFlow allows you to make NLU modules, called agents (basically the face of your bot). This agent connects to your backend and provides it with business logic.

#### (ii) Intent

An agent is made up of intents. Intents are simply actions that a user can perform on your agent. It maps what a user says to what action should be taken. They're entry points into a conversation.

In short, a user may request the same thing in many ways, re-structuring their sentences. But in the end, they should all resolve to a single intent.

Examples of intents can be:

"What's the weather like in Mumbai today?" or "What is the recipe for an omelet?"

You can create as many intents as your business logic desires, and even co-relate them, using contexts. An

intent decides what API to call, with what parameters, and how to respond back, to a user's request.

#### (iii) Entity

An agent wouldn't know what values to extract from a given user's input. This is where entities come into play. Any information in a sentence, critical to your business logic, will be an entity. This includes stuff like dates, distance, currency, etc. There are system entities, provided by DialogFlow for simple things like numbers and dates. And then there are developer defined entities. For example, "category", for a bot about Pokemon!

#### (iv) Context

Final concept before we can get started with coding is "Context". This is what makes the bot truly conversational. A context-aware bot can remember things, and hold a conversation like humans do.

Consider the following conversation:

"Hey, are you coming for piano practice tonight?"  
"Sorry, I've got dinner plans."  
"Okay, what about tomorrow night then?"  
"That works!"

Did you notice what just happened? The first question is straightforward to parse: The time is "tonight", and the event, "piano practice".

However, the second question, "Okay, what about tomorrow night then?" doesn't specify anything about the actual event. It's *implied* that we're talking about "piano practice". This sort of understanding comes naturally to us humans, but bots have to be explicitly programmed so that they understand the context across these sentences.

### B. Webhook

we know what DialogFlow can do, one may ask “How do I create a useful chatbot with some complex actions ?” Well, that’s where the webhook is handy. Every time DialogFlow matches an intent, you have the possibility to ask DialogFlow to send a request to a specific endpoint. An endpoint which you’ll obviously have to code. The flow graph will be as follows.

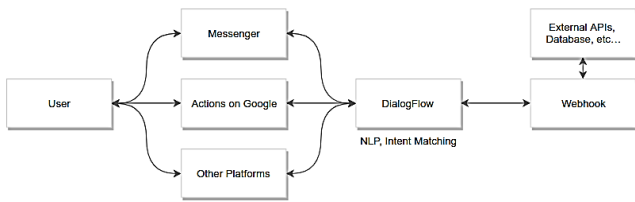


Figure 1 : Flowchart for webhook communication

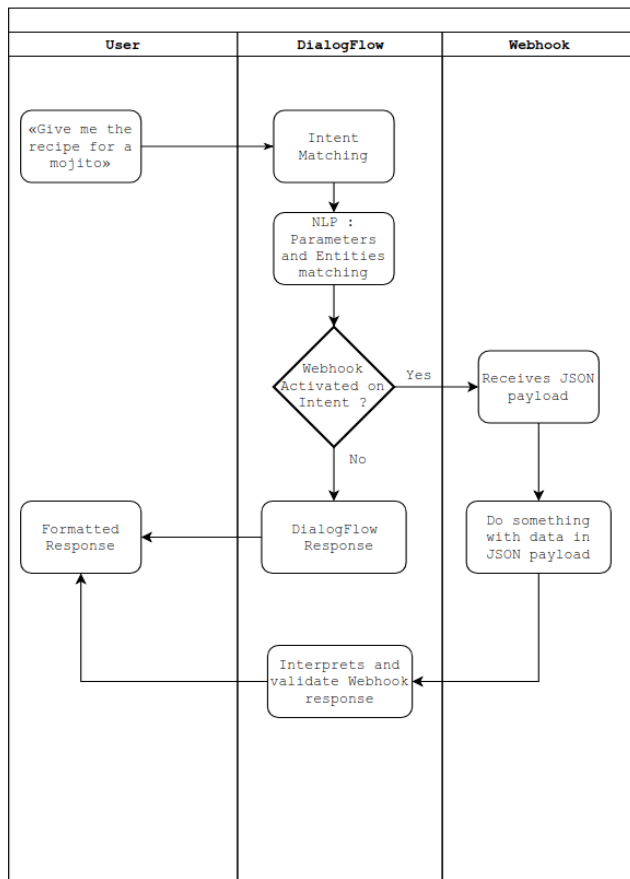


Figure2: State Diagram

### III. RESULTS AND DISCUSSION

Used Nodejs and PostgreSQL to create an API which is used to act as a webhook. when the user asks a query like “can you book a resource for me.” Then dialogflow triggers a fulfillment response which comes from the API which is connected to the dialogflow using webhook. The response which came from the API is displayed to the user. To book resource, the chatbot asks for the Employee ID after the Employee gives his/her Employee ID the fulfillment is triggered to get the response. The API validates the Employee ID.

if he/she is a valid Employee the chatbot continues the conversation. If the Employee is not valid it shows Employee ID not found. After that, the Employee can book resource if the resource is already booked it displays the resource is already booked. If the resource is not booked yet then it shows confirmation messages like your resources have been booked and sends a confirmation mail and SMS to Employee email ID and mobile number respectively.

Some of the screenshots which shows how to book a resource.

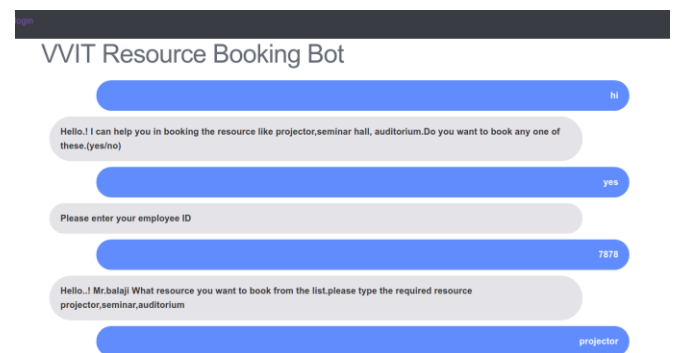
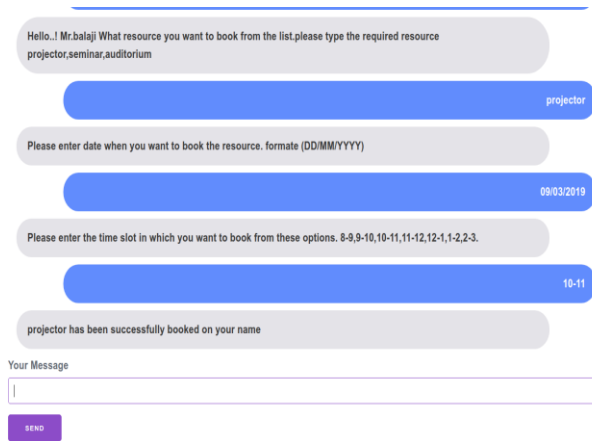
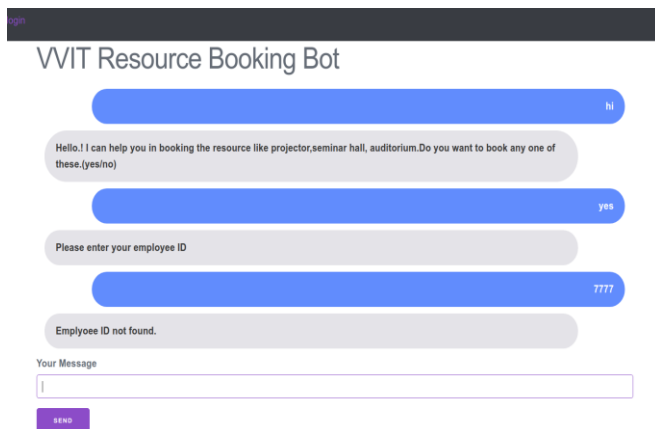


Figure 3 : Website Screen Shot 1 (Employee Booking Resource part 1)



**Figure 4 :** Website Screen Shot 2 (Employee Booking Resource part 2)



**Figure 5 :** Website Screen Shot 3 (Where Employee ID not found)

#### IV. CONCLUSION

The chatbot is efficient and timesaving in booking University/Institution resources like auditoriums, seminar halls, projectors etc.

#### V. REFERENCES

- [1] J. Weizenbaum, "Elizaa computer program for the study of natural language communication between man and machine," Communications of the ACM, vol. 9, no. 1, pp. 36–45, 1966.
- [2] A. M. Neves, F. A. Barros, and C. Hodges, "Iaiml: A mechanism to treat intentionality in aiml chatterbots," in Tools with Artificial Intelligence, 2006. ICTAI'06. 18th IEEE International Conference on. IEEE, 2006, pp. 225–231.

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