VIBOT: Chatbot Intent Recognition for College Website using Dialogflow

[1]Ms. Shagun Pathak,[2]Ms. Ishita Tyagi,[3]Ms. Darshana Panchal,[4]Prof.Kirti Ahirrao

[1]Student,[2]Student,[3]Student,[4]Assistant Professor

[1]Department of Computer Engineering,

[1] Vishwaniketan Institute of Management Entrepreneurship Engineering & Technology (ViMEET)

Khalapur, India

Abstract- A chatbot (ViBOT) main goals is to do a communication between machine and human. The framework has been embedded to identify the sentences and make a decision to give a response to answer a particular question. The conversation of data which are used to give an answer to particular questions are stored in database i.e Knowledge of chatbot. Chatbots are in high demand in today's industry world. It presents a new way for individuals to interact with computer systems. In ancient, it requires a search engine or filling a form to get a solution or answer of asked question by a software. The framework is integrated with UI which allows a user to simply ask questions in the same manner that they would address a human. To understand a human language an NLP(Natural Language Processing) is used. It is the main reason to give rise to chatbots. It is integrated with the platforms where chatbots are deployed include Facebook Messenger, Skype, and Slack, Telegram. This paper successfully explained and implemented a chatbot which can be used to get all information related to College and also it is integrated with College Facebook page and also extract the data from database. So basically it preserves the valuable time of the users, and the chatbot will extract the matching data related to question asked by the user while answering the question related to college activity. In this new proposed system the user can use either text or voice while communicating with the VIBOT. Our new proposed system will help the user, and visually impaired people.

Keywords- **Chatbot, UI, NLP, Facebook messenger, College chatbot (ViBOT).**

I. INTRODUCTION

Chatbot is an computer program which is designed to stimulate an brilliant and smart communication with human users. It can communicate via textual or auditory methods. There are number of business, website or app that can be benefited by using chatbots which causes a great impact on business. As in the world of higher educations, college chatbot had trasformed the way the student interact with their universities. Due to chatbots there are major facelift in college campus. There is a long list of question have been asked by newly enrolled students at the start of academic year so it is very necessary to get their every problem solved. Therefore here the ViBOT (college chatbot) will give them an instant and accurate response about the intents related to college stuff e.g. syllabus, college timing, bus timing, fees, and many more. Due to chatbot the students – both new and existing ones or even the faculties – new and existing ones won't spend more time to figuring out whom to direct their custom queries. Thus the user can consumes a lot of valuable time by using chatbot app like Facebook Messenger or a ViBOT which have been integrated with the college website. And even the data which may get changed by the college e.g. fees, timing of bus, etc will get updated time to time so that the user won't receive any wrong or old information about college.

II. LITERATURE REVIEW

SR NO	TITLE	AUTHOR &YEAR	TECHNOLOGY USED	ADVANTAGE	DISADVANTAGE
1	RAILBOT: A Railway (IRCTC) Chabot	Sahaya Sakila, Aksha Shrivastava,Md Arman Ansari ,Laxmi Kanta Kar,Mukul Kumar(IEEE 2018)	Dialogflow	-Save Time of Passenger -Save Memory Space & Internet Usage.	-Bugs -Person cannot report railway complaints -Booking information are not displayed.
2	Ontology based Chatbot(for E-commerce Website)	Anusha Vegesna, pranjal jain, Dhruv porwal (IJCA 2017)	Api.ai	-Helps user to obtain information by chatbots. -Maps relationships & retrieves data.	-major flaws of existing chatbots. -not good entity recognition
3	College Enquiry Chatbot Using A.L.I.C.E	Balbir Singh Bani, Ajay Pratap Singh (IJNTR -2017)	ALICE	- Stored a huge corpus text. -Uses simple patterns to represent i/p and o/p.	-Providing general information such as FAQ. -Limited type of questions.

III.   PROPOSED SYSTEM

Chatbot framework helps you to develop and design your chatbot in easy way. It has classes and methods which could help developers to build efficient chatbot (Eg: because of default intents such as welcome and fallback, chatbot will never stops replying if it is not able to find required answer). There are so many different bot frameworks are available as follows : Dialogflow, Microsoft bot framework, IBM Watson, Pandorabot, etc. In this project we have used Dialogflow framework[6].

A. Dialogflow :

Dialogflow is an NLP framework which has strong NLU engine for understanding natural language. Dialogflow provides integration with different platforms including facebook,slack and many more.

It has options to connect external APIs, webhooks and database to your chatbot using fulfillment[5].
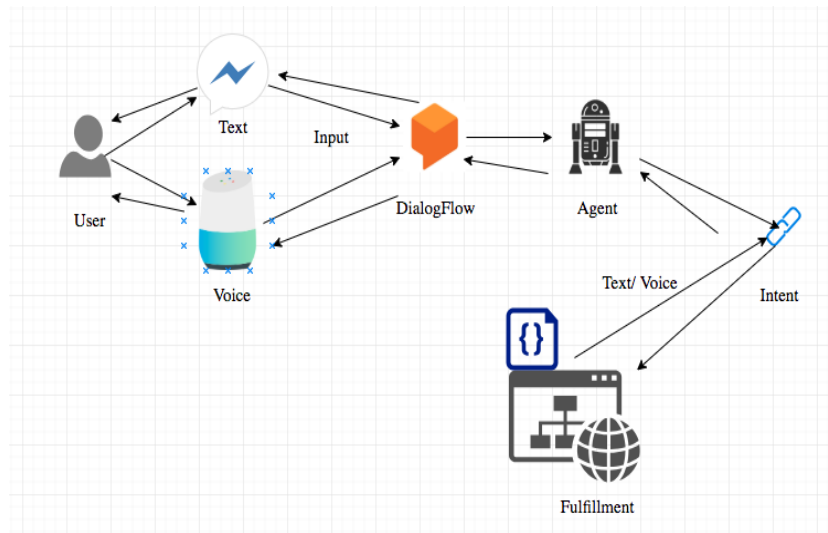

Figure.3.1 Flow of DaialogFlow[10]

B. ViBOT:

ViBOT is integrated with college facebook page and website.User can chat with ViBOT to any one of the integrated options (i.e facebook or website) and get appropriate reply which is related to college. If ViBOT does not find answer, then it will give replies from fallback intent which is present in dialogflow's default intent so that conversation will not stop and it will help user to correct/change their questions.

C. Bot Framework

Bot framework is framework where bots are build through which their performance and working is described. It becomes a huge struggle for developer to target on so many intelligent messaging and chatting platforms or SDKs for chatbot. However, bot framework is like "Write once and execute anywhere".

List of Bot Frameworks are:

1. Dialogflow (Api.ai)
2. Wit.ai
3. Pandorabots
4. BotPress
5. Microsoft Bot Framework
6. IBM watson
7. ChatterBot
8. BotKit

A platform that we use to build professional, intelligent and well-designed chatbot is **Dialoglfow(Api.ai)**. The utmost distinguish between Dialogflow and other Bot Frameworks are Dialogflow Framework is fully-featured framework or bot builder platform. Dialogflow Framework provides user-interface for any channels integration and NLU services. It also had an integrated editor which is powered by Cloud for coding.

D. **Dialogflow** is a Google-owned developer of human-machine interaction technology and it is based on NLP(Natural Languages Processing) conversation. It has more than 450k developers and it is used in more than 150 countries all around the world[4]. Dialogflow supports 14+ languages and can be integrated on any platform e.g.Google Assistant, Alexa, Cortana, Facebook Messenger and other platforms your users are on[5].
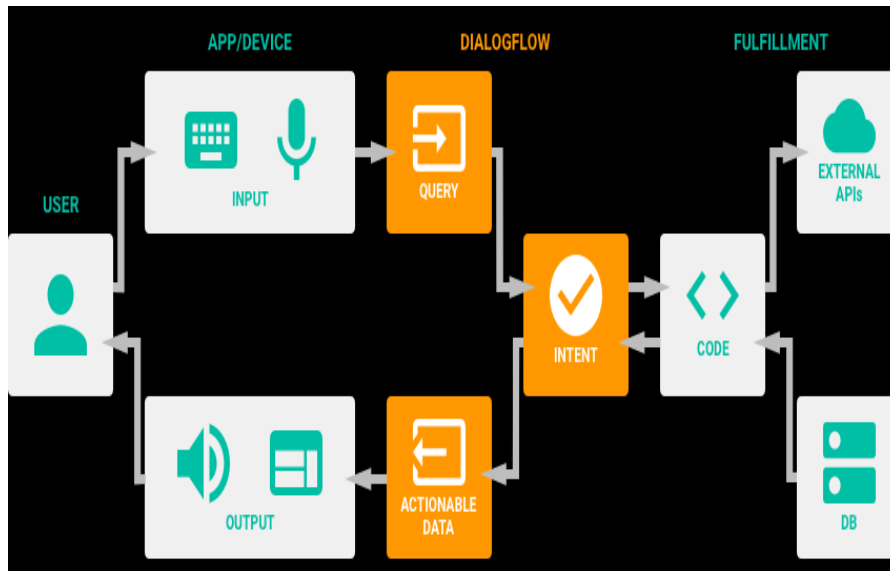
IV.   SYSTEM ARCHITECHTURE

Figure. 4.1 System Architechture of Dialogflow[9]

A. Implementation

Chatbot can be implemented by using building blocks of dialogflow which are as follows: Agent,Intent,Entities,Fullfillment,Integration,SmallTalk. ViBOT has built by using all these building blocks.

1. Agent: Agent is the one who makes conversation with user through building blocks. Here agent is ViBOT.
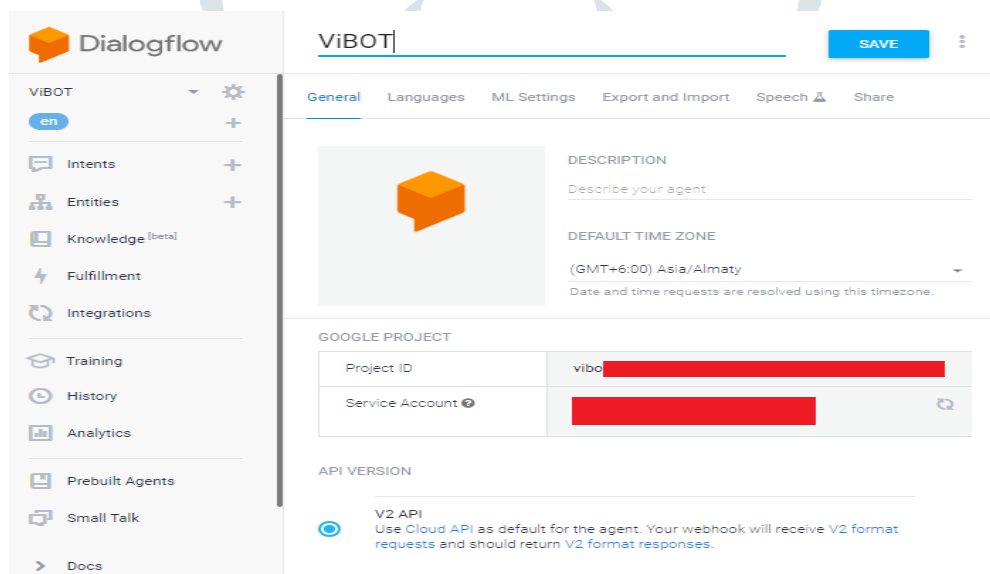

Figure. 4.2 Creating agent in dialogflow

2. Intent: Intents tells the intention of the chatbot i.e for what pupose it has created. Intention of ViBOT is to help user to know about college related activities. Intents of the ViBOT includes information for faculty,academic calendar,placement,cultural fest,fees,etc.
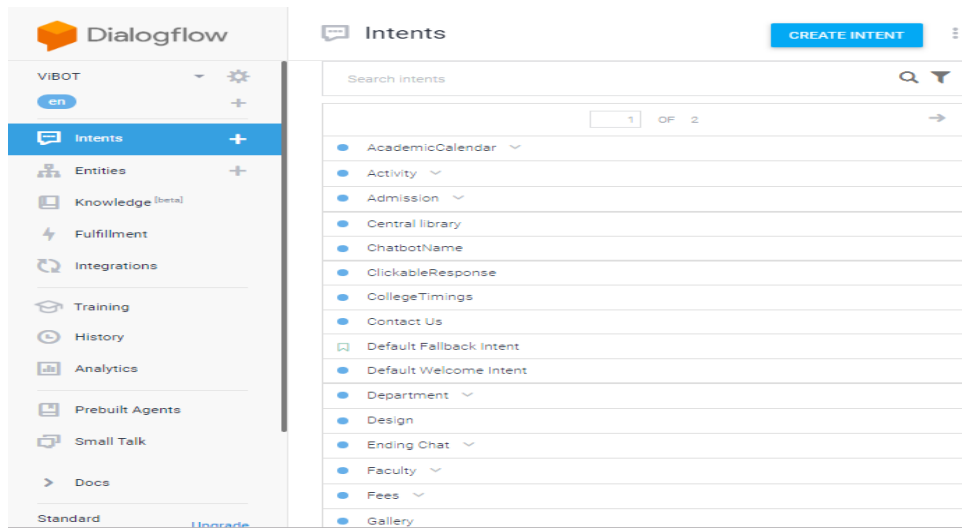
Figure.4.3 Creating intents in dialogflow

3. **Entity:** Entities are used when we want particular input for giing appropriate response according to it. For eg: ViBOT has entity name department for extracting department related data for user.
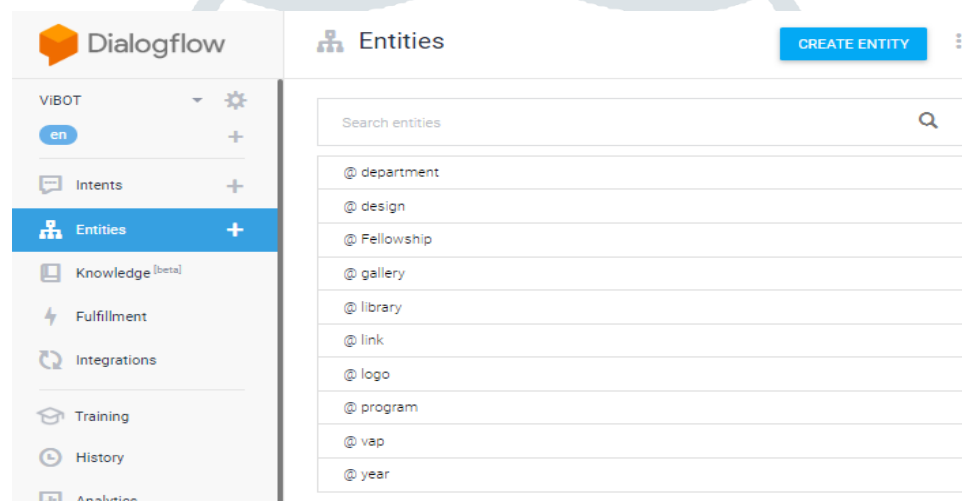

Figure.4.4 Creating entities in dialogflow

4. **Fulfillment:** ViBOT uses fulfillment to get responses stored in database according to user's requirement. The code for connecting databse and to fetch related data from database is implemented by using fulfillment's inline editor. Database used is firebase database whose link gets available after you deploy your code or by going through following link: https://console.firebase.google.com/?pli=1. After creating database using firebase you have to insert link to your code so your databse will connect to your chatbot[5].
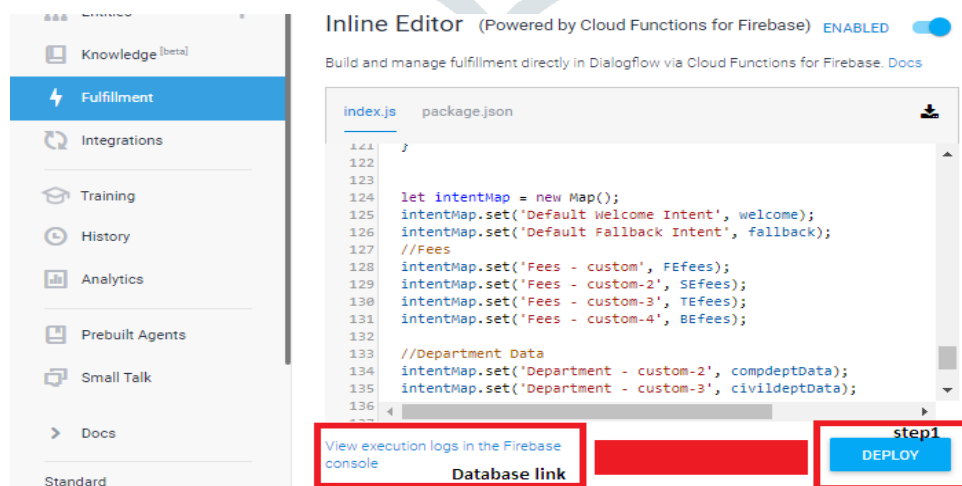

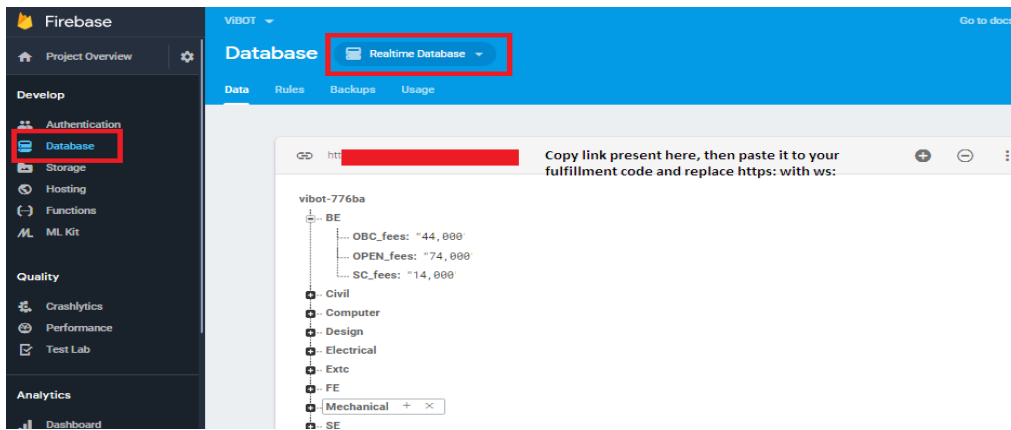
Figure.4.5 Deploying the code
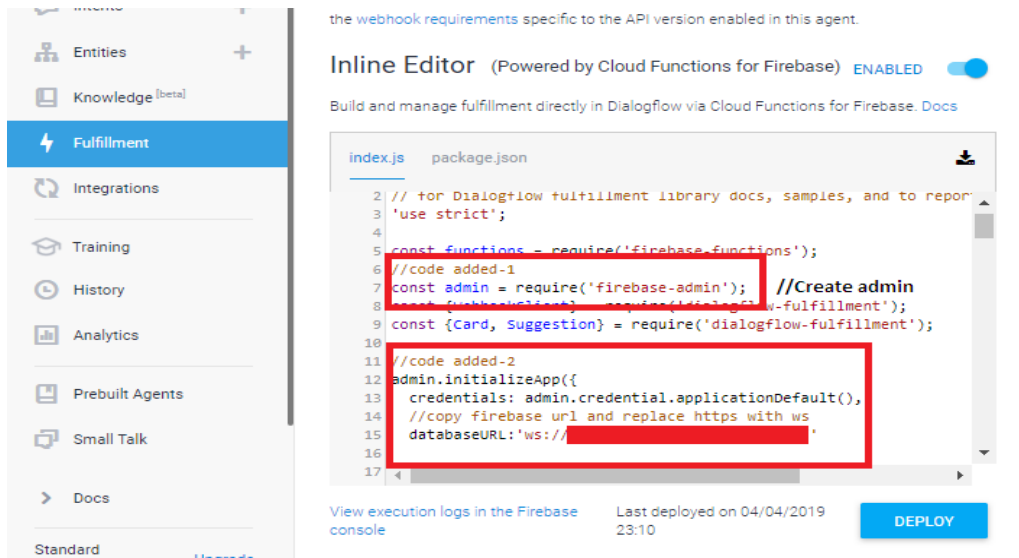
Figure.4.6 Intents created in database

Figure.4.7 To connect our database with chatbot(ViBOT)

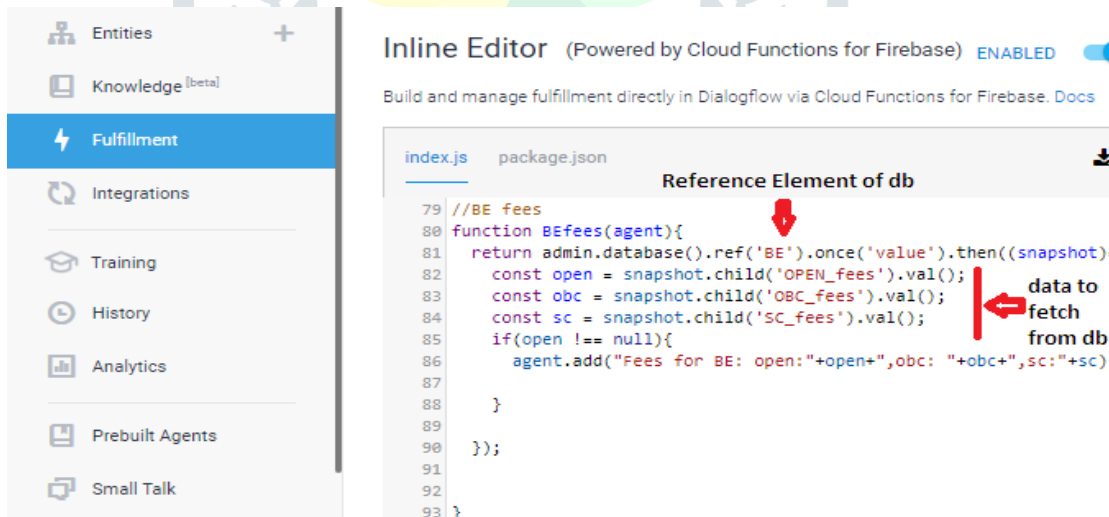**4.1. Example to fetch data from database:**

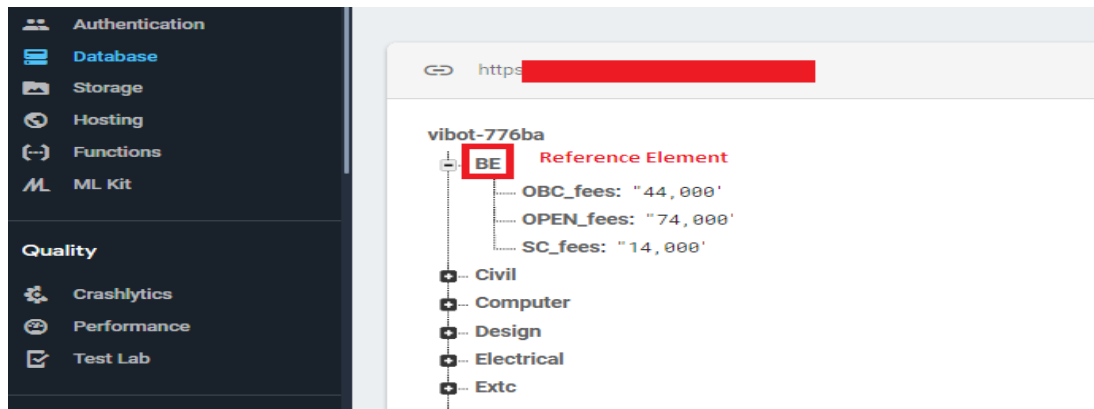**Figure 4.8 Fulfillment (Inline Editor)**

Figure.4.9 Database

5. Integrations: By using dialogflow we can integrate our chatbot with different platforms and ViBOT has integrated with Facebook. For integrating chatbot with facebook you require following things ready: Facebook account, Facebook page. You can integrate your chatbot with facebook by creating facebook app using facebook developer console. In token access section you have to select page where you want your chatbot to integrate and it will generate token for your facebook page.After that go back to dialogflow, in integration section select facebook and enable it first.Follow the steps given there. After that go to facebook developer console,under webhook section enter callback url and verify token from dialogflow facebook integration option.After verify and save your chatbot will successfully get integrated with facebook[5].
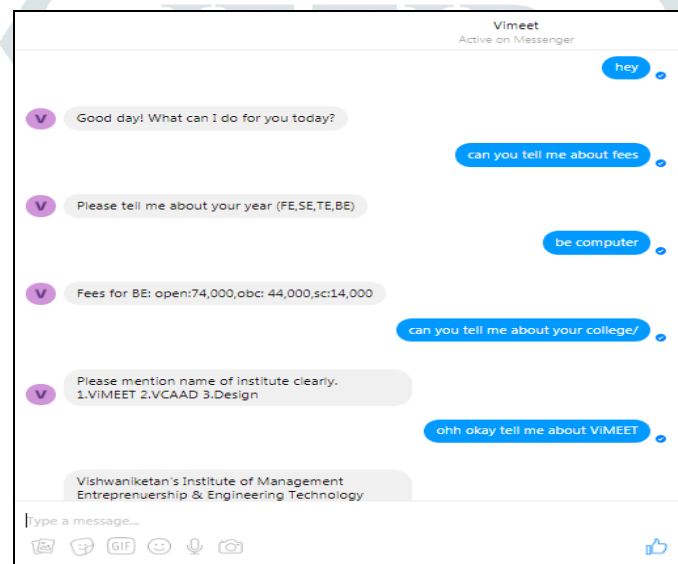

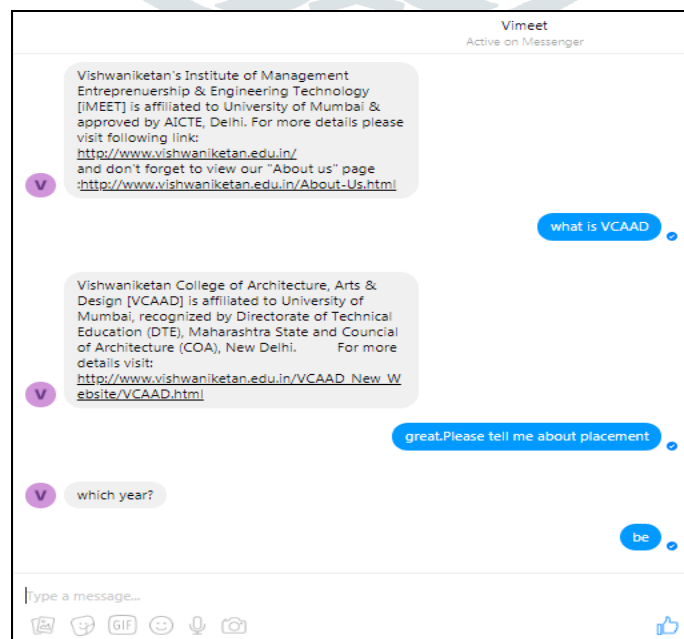**Figure. 4.10. Integrated ViBOT with Facebook Messenger**

Figure. 4.11 Integrated ViBOT with Facebook Messenger

6. Small Talk:

Small Talk is one of the part of dialogflow framework, which is used to give an answer to friendly and easy-going conversation. This feature is used to enhance the communication with user by dealing with common question's answer which may not be present in the intents you built in your agent.Small-talk may either be imported initially(Prebuilt) agent or can be enabled to your agent.

To enable Small Talk for your agent in dialogflow, follow these steps[5]:
1. Click Small Talk in the left menu.
2. Click on the switch to enable.
3. Click SAVE.

6.1. Example of small-talk:

```
User: How are you?
Agent: Wonderful as always. Thanks for asking.

User: You're so sweet.
Agent: Thanks! The feeling is mutual.
```

Figure 4.12 Small talk example

Below screenshots will show the sample small-talk of our chatbot(ViBOT).

Figure.4.13 Small-Talk with our ViBOT

7. Backend:

In Backend we have used a Fulfillment part which is thepowerful way to attach or bind database with our agent in Dialogflow. Here we have used a firebase as a database which store all the information related to our user's requirement. And to connect database with our ViBOT we have inserted a link in our code using firebase.

8. Frontend:

To make a user interface for chatbot(ViBOT) we move to the SDK section in dialogflow. In SDK section we move to **"V1 Client Libraries (Legacy)"** and open a JavaScript code in Github. After opening the JavaScript code we found an access key of that code, there we pasted our ViBOT access key so that our ViBOT will get connected to user interface (Note: Here you can choose any programming language which you want to prefer). Now we have to use client access tokenkey of ViBOT which is available in **"Setting"** option in dialogflow framework (Note: In Setting option after scrolling down you will get two access keys, one is Client Access Key and another of Developer Access Key. From that we choosed Client Access Key). By using access key

we will be able to get all the data fetched from our database. After this we had made a user interface for our chatbot (ViBOT) using HTML and CSS languages which is integrated with our college website.

After visiting college website there will be an option to interact with the VIBOT user interface.

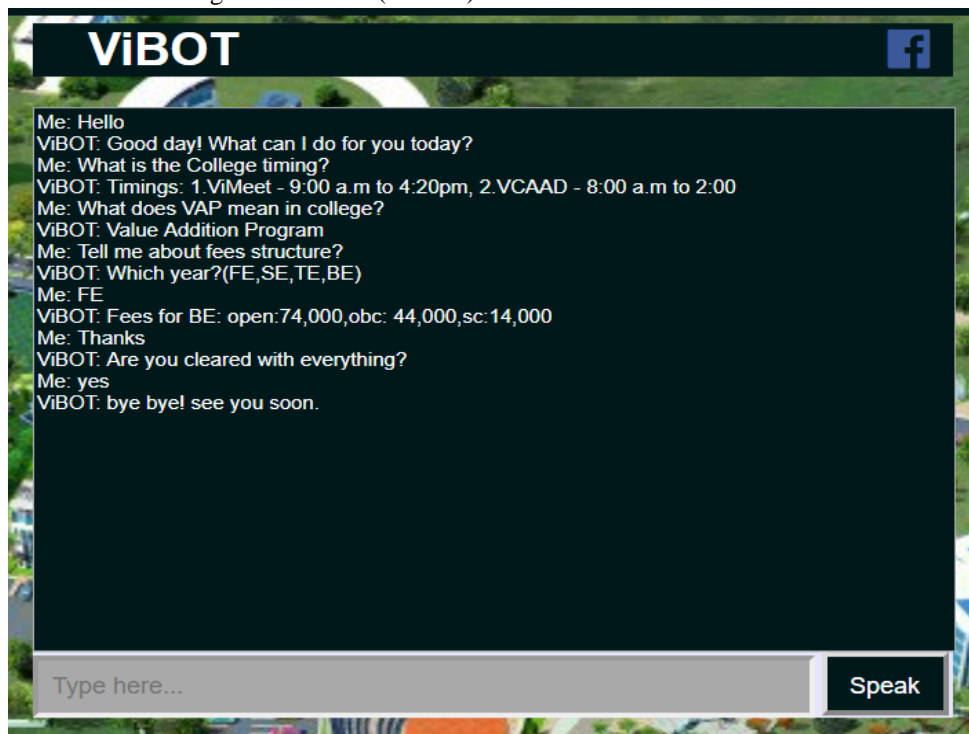Below screenshots will show the testing of out chatbot(ViBOT).

Figure.4.14 Getting Information about college with our ViBOT

V. CONCLUSION

This paper successfully explains the implementation of chatbot (ViBOT) using Dialogflow which will give the required information regarding college. With the help of different Integration like Facebook Messenger, web demo amd many more it will create multiple platform for user. The Dialogflow help us to import and export chat agent which is easier than any other platform. This chatbot will give benefit to the user by saving time and internet usage which is a key of effective chatbot.

VI. ACKNOWLEDGEMENT

We would like to appreciatate to all those people who had given us all the possibility which is required to complete this task . We express our profound gratitude and deep regards to our guide Dr. Ketan Bahulkar and Prof. Kriti Ahirrao for their constant encouragement, guidance and monitoring throughout the completion of this report. We express our sincere thanks to Dr. B.R.Patil, Principal, Vishwaniketan Institute of Management Entrepreneurship and Engineering Technology (ViMEET) for providing the much necessary facilities. We also say very much thankful to Prof. Charusheela M. Pandit, Head of Department of Computer Engineering, Vishwaniketan Institute of Management Entrepreneurship and Engineering Technology (ViMEET), Khalapur, Maharashtra for her generous support. And last but not least we show gratitude to all those you had helped us directly or indirectly for the completion of this report.

VII. REFERENCE

[1] RAILBOT: A Railway (IRCTC) Chabot, Sahaya Sakila, Aksha Shrivastava, Md Arman Ansari , Laxmi Kanta Kar, Mukul Kumar (IEEE 2018).

[2] Ontology based Chatbot(for E-commerce Website), Anusha Vegesna, pranjal jain, Dhruv porwal (IJCA 2017).

[3] College Enquiry Chatbot Using A.L.I.C.E, Balbir Singh Bani, Ajay Pratap Singh (IJNTR -2017)

[4] https://www.t2omedia.com/en/ideas-en/chatbots-dialogflow/

[5] https://dialogflow.com/

[6] https://www.theseus.fi/bitstream/handle/10024/142561/thesis.pdf?sequence=1&isAllowed=y

[7] https://chatbotslife.com/chatbot-development-using-dialogflow-20b39c75232c

[8] https://www.quora.com/Which-are-the-best-chatbot-frameworks

[9] https://dzone.com/storage/temp/7988706-agents-000.png

[10] https://cdn-images-1.medium.com/max/1600/1*tZKE2D6wLbgOdWMuNQ4CiQ.png