



G-BOT

The Chatbot for GITAM University

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Abstract: This study has been undertaken to develop a G-BOT chatbot for GITAM University using DIALOGFLOW and NLP. The G-BOT is an innovative digital assistant designed to transform communication and information sharing within the dynamic realm of higher education. The G-BOT offers quick individual responses on issues such as courses, fees, scholarships, and information related to GITAM University. Through efficient interaction within the University Community, the G-BOT becomes a rich source of knowledge apart from technological advancement. In an era where smooth access to information is crucial, G-BOT is a great stride in optimizing the educational journey. It empowers users with instant, accurate, and personalized support that enables individuals to navigate the academic system with ease. As a 24/7 digital assistant, the G-BOT ensures continuous availability that enriches the educational experience for students and parents.

Index Terms – G-BOT, Chatbot, NLP, DIALOGFLOW, Intents and Entities, and GITAM University website.

I. INTRODUCTION

In an epoch of fast technological changes and increased reliance on digital solutions, chatbots have come about to transform many industries. Chatbots, AI-powered programs, engage in conversations, answer questions, offer information, and aid in tasks, revolutionizing various industries, including education. As the future of user interaction, they provide intuitive, natural language interfaces. In the digital age, institutions like GITAM University seek innovative solutions to enhance learning and streamline administration.

These AI-run programs are carefully developed to be able to have a conversation with humans in natural language, providing responses, information, and support with incredible accuracy while engaging in tasks. The same applies to education as educational institutions such as prestigious universities like GITAM University continue searching for new ways to enhance the learning experience and streamline administrative functions. Chatbots have quickly become critical applications in the interaction domain. Through their adaptive interfaces which are intuitive, they can understand and respond to human languages therefore acting as a link between technology and human needs. Educational institutions today face a special challenge of improving student's learning journey and streamlining administrative processes at the same time.

GITAM University is one of the leading institutions championing innovation toward solving these problems. The university recognizes the immense potential of smart chatbots, engineered to offer real-time assistance, dispense pertinent information, and furnish support not only to students but also to faculty, staff, and parents. At the core of this groundbreaking initiative lies a sophisticated blend of cutting-edge technologies. GITAM University has harnessed the combined power of Natural Language Processing (NLP), DIALOGFLOW, and Web Application to breathe life into the G-BOT. This quartet of technologies facilitates seamless integration with the university's database, enabling rapid access to critical information.

A. NLP:

NLP is a subfield of AI that makes the interaction between machines and human language. It makes machines understand, interpret, and generate human language, making it a vital technology for a wide range of applications, including chatbots, language translation, and much more. NLP algorithms and models like OpenAI's GPT-3.5 have revolutionized the way Humans interact with machines and technology, allowing for more human-like conversations and enhanced user experiences. It is at the heart of many modern conversational AI systems like DIALOGFLOW.

B. DIALOGFLOW:

DIALOGFLOW, developed by Google, is a powerful and user-friendly development suite for creating conversational interfaces. It enables developers to build chatbots and voice applications that can understand and respond to natural language inputs. With DIALOGFLOW, businesses and developers can create virtual agents that provide efficient customer support, streamline user interactions, and automate various tasks. By leveraging machine learning and NLP, DIALOGFLOW empowers applications to comprehend and process human language, making it a valuable tool in the development of conversational AI solutions.

C. WEB DEVELOPMENT:

Web Development is used for creating static and dynamic websites. Web Development includes HTML, CSS, and JavaScript. HTML provides the structure of the website, CSS enhances visual presentation and layout, and JavaScript adds interactivity and dynamic features, enabling a seamless user experience. Web Development plays a pivotal role in shaping the digital landscape, providing businesses, organizations, and individuals to establish an effective online identity and deliver content seamlessly to global users.

II. LITERATURE SURVEY

A literature survey is a comprehensive summary of the previous research on a topic. The literature review surveys scholarly articles, books, and other sources relevant to a particular area of research. It gave a theoretical base for the research and helped us to determine the nature of our research.

This article [1] discusses the ongoing problem that educational institutions encounter. Every year, prospective students and their parents visit the college website to look for answers to their queries. The authors suggest creating an "Intelligent Enquiry Bot" that is integrated into the official college website to satisfy this desire. This chatbot, built upon NLP and LSTM networks, offers precise responses to user inquiries, particularly in the context of college-related and admission queries. This intelligent chatbot significantly enhances the college's online resources for information and support, providing a powerful tool for addressing fundamental inquiries.

This paper [3] created intelligent chatbots for college inquiries that are intended to efficiently handle queries from a variety of users, such as parents, students, faculty, and freshmen, via the official college website. These chatbots are driven by algorithms derived from recurrent Deep Neural Networks (DNNs), specifically from NLP and LSTM networks. Their main objective is to effectively address common inquiries about admissions and the college, adding value to the college's online resources and providing assistance and knowledge to those in need.

This paper [6] introduced a web-based education system for College Enquiry Chatbot. This chatbot, created with Rasa technology, uses NLU and Rasa Core to deliver context-aware AI interactions. It obtains an average evaluation score of 0.669 (F1 Score), 0.725 (Accuracy), and 0.628 (Precision). This chatbot's many uses include answering questions in a variety of situations and education. Its high accuracy, self-operating nature, round-the-clock availability, and low maintenance requirements make it an excellent choice.

III. PROPOSED METHODOLOGY

The proposed methodology makes use of both qualitative and quantitative perspectives and includes a broad array of approaches such as literature reviews, expert opinions, focus groups, and content validation.

Our system methodology architecture for the integration of the G-BOT i.e., G-BOT, developed using DIALOGFLOW into the GITAM Website is designed to facilitate seamless communication between users and the chatbot. The chatbot will be answered based on questions asked the language model built and also the response media created. Users can enquire about GITAM University and query related to courses, fee structure, and scholarships.

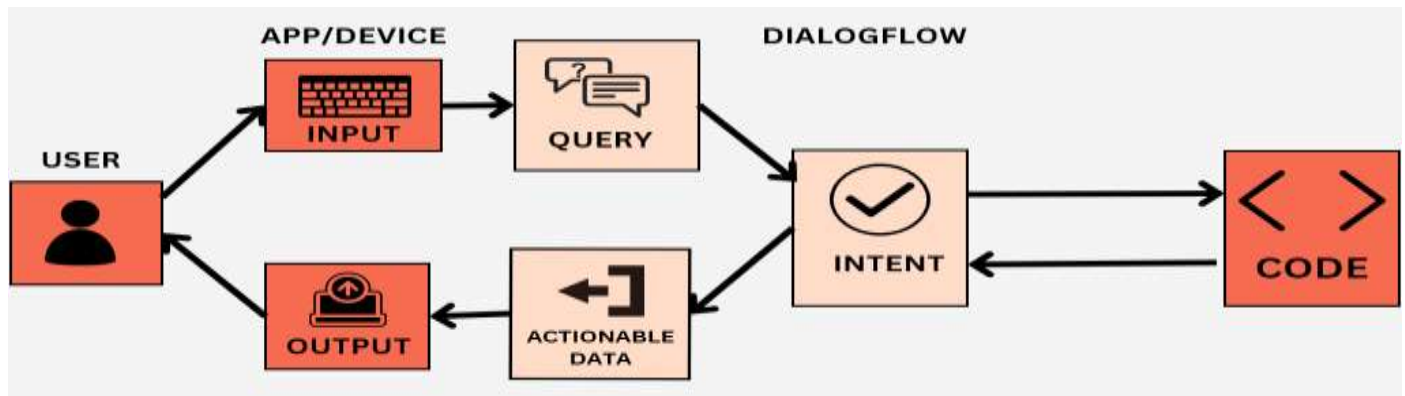


Fig. 1. System Architecture of G-BOT

The basic algorithm that will be implemented for working of the proposed system as follows:

Step 1: User Interaction Initiation

- Start the interaction with the user. Obtain the user's query related to GITAM University.

Step 2: DIALOGFLOW Integration

- User queries are processed by DIALOGFLOW using predefined intents and entities to accurately recognize the user's intent.
- The identified intent triggers the retrieval of actionable data from DIALOGFLOW's responses and underlying code.

Step 3: Website Integration

- The GITAM Chatbot interface is seamlessly integrated into the GITAM University website, providing users with a cohesive interaction experience.

Step 4: Query Processing

- User queries follow a systematic flow within DIALOGFLOW, including intent recognition, entity extraction, and backend process access for actionable data.

Step 5: Response Processing

- Response will be processed when there is a match in the intent and entities from the DIALOGFLOW.

Step 6: User Output

- The GITAM Chatbot generates responses based on processed user queries and actionable data retrieved from the GITAM website.

Step 7: Interaction Continuation and End

- The interaction continues as users ask further questions or seek additional information related to GITAM University. Users can choose to end the interaction when they have received the desired information or completed their queries.

IV. RESULTS AND DISCUSSION

The college enquiry chatbot is used in GITAM University as long as it contains data related to the University either JSON file or CSV file. We extracted the data and represented the data in CSV file format using a Web scraping technique. The data extracted are course details, fee structure for each course and scholarship details of the GITAM University. These CSV files are further used in DIALOGFLOW to create the intents and entities.

```
import requests
from bs4 import BeautifulSoup
import pandas as pd

url = 'https://www.gitam.edu/'
response = requests.get(url)
soup = BeautifulSoup(response.text, 'html.parser')

data_list = []

titles = soup.find_all('div', class_='vt-award-item_link')
for title in titles:
    data_list.append(title.text)

df = pd.DataFrame(data_list, columns=['title'])
df.to_excel('output.xlsx', index=False)

xml_content = soup.prettify()
print(xml_content)
```

Programme	I Year Fee (2024)	II Year Fee (2026)	III Year Fee (2027)	IV Year Fee (2027)
Undergraduate				
B.Tech. Biomedical Engineering	₹ 270,000	₹ 283,500	₹ 297,600	₹ 312,400
B.Tech. Biotechnology	₹ 270,000	₹ 283,500	₹ 297,600	₹ 312,400
B.Tech. Civil Engineering with Computer Application	₹ 270,000	₹ 283,500	₹ 297,600	₹ 312,400
B.Tech. Computer Science and Business Systems	₹ 364,000	₹ 382,200	₹ 401,300	₹ 421,300
B.Tech. Computer Science and Engineering	₹ 364,000	₹ 382,200	₹ 401,300	₹ 421,300
B.Tech. Computer Science and Engineering (Artificial Intelligence and Machine Learning)	₹ 364,000	₹ 382,200	₹ 401,300	₹ 421,300
B.Tech. Computer Science and Engineering (Cyber Security)	₹ 364,000	₹ 382,200	₹ 401,300	₹ 421,300
B.Tech. Computer Science and Engineering (Data Science)	₹ 364,000	₹ 382,200	₹ 401,300	₹ 421,300
B.Tech. Electrical & Computer Engineering	₹ 270,000	₹ 283,500	₹ 297,600	₹ 312,400
B.Tech. Electronics and Communications Engineering	₹ 270,000	₹ 283,500	₹ 297,600	₹ 312,400
B.Tech. Electronics Engineering (VLSI Design and Technology)	₹ 270,000	₹ 283,500	₹ 297,600	₹ 312,400
B.Tech. Mechanical Engineering	₹ 270,000	₹ 283,500	₹ 297,600	₹ 312,400
B.Tech. Robotics & Artificial Intelligence	₹ 270,000	₹ 283,500	₹ 297,600	₹ 312,400
Postgraduate				
M.Tech. Computer Science and Engineering	₹ 116,000	₹ 121,800	-	-
M.Tech. Construction Technology and Management	₹ 116,000	₹ 121,800	-	-
M.Tech. Data Science	₹ 116,000	₹ 121,800	-	-
M.Tech. Food Processing Technology	₹ 116,000	₹ 121,800	-	-
M.Tech. Machine Design and Robotics	₹ 116,000	₹ 121,800	-	-
M.Tech. Manufacturing Technology and Automation	₹ 116,000	₹ 121,800	-	-
M.Tech. Power System and Automation	₹ 116,000	₹ 121,800	-	-
M.Tech. Structural Engineering	₹ 116,000	₹ 121,800	-	-
M.Tech. VLSI Design	₹ 116,000	₹ 121,800	-	-
Lateral Entry				
II Yr B.Tech. Biotechnology	₹ 270000	₹ 283500	₹ 297600	-
II Yr B.Tech. Civil Engineering	₹ 208000	₹ 218400	₹ 229300	-
II Yr B.Tech. Computer Science and Business Systems	₹ 364000	₹ 382200	₹ 401300	-
II Yr B.Tech. Computer Science and Engineering	₹ 364000	₹ 382200	₹ 401300	-
II Yr B.Tech. Computer Science and Engineering (Artificial Intelligence and Machine Learning)	₹ 364000	₹ 382200	₹ 401300	-
II Yr B.Tech. Computer Science and Engineering (Cyber Security)	₹ 364000	₹ 382200	₹ 401300	-
II Yr B.Tech. Computer Science and Engineering (Data Science)	₹ 364000	₹ 382200	₹ 401300	-
II Yr B.Tech. Computer Science and Engineering (IOT)	₹ 364000	₹ 382200	₹ 401300	-
II Yr B.Tech. Electrical and Electronics Engineering	₹ 208000	₹ 218400	₹ 229300	-
II Yr B.Tech. Electronics and Communications Engineering	₹ 258000	₹ 270900	₹ 284400	-
II Yr B.Tech. Mechanical Engineering	₹ 208000	₹ 218400	₹ 229300	-

Fig .2. Fees structure of Engineering courses

A. RESULTS OF THE DIALOGFLOW:

Intents and entities are meticulously crafted within DIALOGFLOW to correspond with user queries and generate precise responses. One of the notable advantages of DIALOGFLOW is its user-friendly interface, ensuring that users can articulate queries effortlessly and receive accurate responses aligned with the available data. Intents serve as pivotal keywords that facilitate the matching process between user queries and the generation of appropriate responses within the platform. Training is already done in the DIALOGFLOW itself.

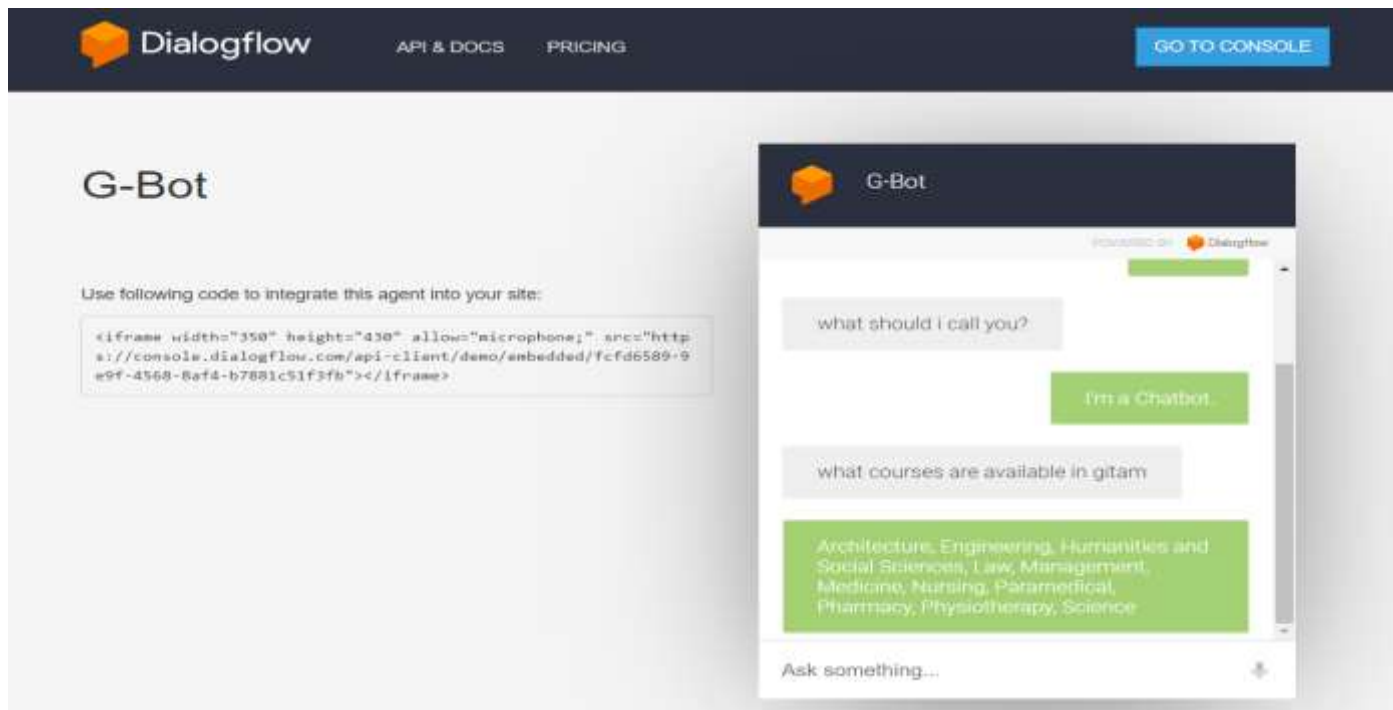


Fig .3. Chatbot Demo in DIALOGFLOW

B.RESULTS OF THE WEBSITE:

As shown in below figure 4, We developed a GITAM University website using HTML, CSS, and JavaScript by adding useful information and images related to our university. Then we integrated our chatbot created in the DIALOGFLOW into the GITAM University website.





Fig .4. G-BOT integration in the GITAM website

C. RESULTS OF THE G-BOT RESPONSES:

As shown in the following figures, the G-BOT can provide information regarding the University. In Figure 5, the G-BOT can greet and the user can interact with the G-BOT. In Figure 6, the user can ask about the courses and fee structure for the Law course at GITAM University. Our G-BOT provides complete information related to the courses, fees structure, scholarship, and also detailed information of the GITAM University.



Fig .5. Greet the G-BOT

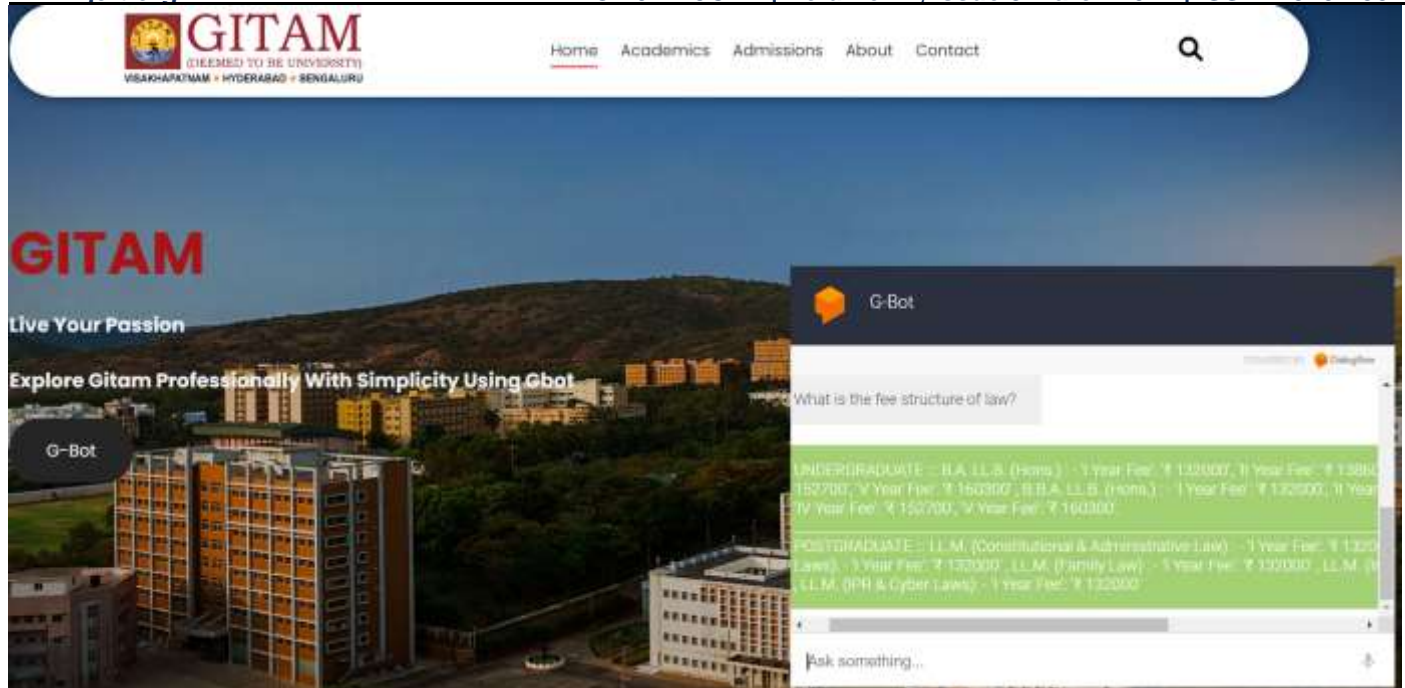


Fig .6. Fees structure of Law course

V. CONCLUSION AND FUTURE SCOPE

This paper proposed an interactive, user-friendly chatbot for University information which are asked by students and parents. In today's technological era, every educational institution stands to benefit significantly from the implementation of a chatbot like G-BOT, which facilitates access to detailed information about the institute. G-BOT plays a pivotal role in fostering improved interactions between newcomers, such as freshers, and the institution, as well as providing valuable assistance to parents. By delivering accurate and pertinent information in response to user queries, G-BOT enhances users' understanding of the institution's ethos and principles. Looking ahead, the future scope for G-BOT includes enhancing its capabilities with features like multilingual support to cater to diverse user bases, incorporating voice recognition for more accessible interactions, refining machine learning models for improved understanding and context awareness, implementing advanced feedback mechanisms for continual enhancement based on user sentiment, and enabling virtual campus tours to assist prospective students in exploring the campus remotely.

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