

Customer Support Chatbot System

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Abstract- A chatbot is a computer program predefined set of responses to understand customer questions and automate responses to them, simulating human conversation. The chatbot has undergone various attempts to become intelligent or human-like. Answering questions that have been asked frequently or that may be found on the official website is a typical responsibility in college. This task costs time and is time-consuming. One of the solutions to this issue is the chatbot. Such inquiries can be naturally and promptly answered by a good chatbot that works nonstop. But creating a chatbot that is clever or human-like is difficult. Both basic domain queries and complex opinion questions should be able to be answered by the chatbot.

Customer Support Chatbot System is the SaaS (Software as a Service) based model. A method of software delivery and licensing in which software is accessed online via a subscription, rather than bought and installed on individual computers. Instead of installing and maintaining software, one can simply access it via the Internet, freeing themselves from complex software and hardware management. Users' queries and solutions vary from business to business. We let the businesses construct their own user journey and can feed the question-response set to the system after being on-boarded.

Index Terms : Chatbot, SaaS (Software as a Service), Classification, Natural Language Processing

I. INTRODUCTION

People have discovered ways to improve and simplify our lives during the past ten years. Nowadays making machine ready to do human-tasks is a trend. It increases the productivity and efficiency and saves time and human efforts. Chatbots are designed to give people an automated way to communicate with the desired organization. They may answer basic questions, make product recommendations, and provide customer support. We solved this problem by digitizing the chatbot so that users do not have to wait in the queue for a long time.

Our objective is to create long-lasting relationships with our customers by providing top-notch services in a culture that values creativity, passion, and joy. Our SaaS product has a strategic focus on collaborating with clients to offer them end-to-end unified communications solutions across the business spectrum. Our suggested chatbot can respond to both simple questions about the domain and more complex ones using either its intelligence or rule-based system. The chatbot would first identify the business where the customer belongs and then would respond according to the business's configured settings.

II. LITERATURE REVIEW

The Chatbots [1] is one of those technologies which is going to change the way we do conversations till now. A Chatbot is a service, powered by rules and sometimes artificial intelligence that you interact with via a chat interface. Most of the chat-bots are designed for engaging in small talk and their personalities are created by the programmer. Designing [2] chat-bots using the current state of the art, mainly uses rules written in AIML (Artificial Intelligence Markup Language) or ChatScript. Generally they are implemented to cover a wide range of issues and topics, but also leaving aside many more opportunity areas. The chatbot [3] was trained to rank the best response from the set of predefined responses through the use of Dialogflow as an engine. The researchers utilized USE Questionnaires for the preliminary testing of 130 respondents from which it received an above-average score and garnered positive perception from the customers. In colleges, [4] especially during the time of admission, reception gets crowded and people have to wait to get their queries solved. If any person wants to know about the college, then he/she has to travel to college. Although every college has its website, not everybody can find the answer to their query. Colleges are not working on weekends, so if someone wants to visit or call reception to get their query answered they will have to wait until any working weekday. To solve these problems, we will create an AI chatbot. This chatbot will be embedded on the college website and will be able to answer any college-related query easily. Chatbot will be able to answer multiple persons at the same time, people don't have to visit the college to get their query solved and it will be available 24/7

The chatbot developed here is a web-based application that converses with humans using Natural Language Processing Libraries and Machine Learning [5]. Since the curriculum of the college keeps on changing, there has to be a database that can be altered and updated. To serve this purpose a website is created in HTML and PHP to update the database from time to time. To improve efficiency and accountability for college students, the bot uses essential data given by the institute themselves. It reduces the paperwork, manpower for a person. The [6] chatbot focuses on the education domain. The system is based on natural language processing (NLP). Our proposed chatbot can answer basic information about the college and also the advanced questions. Since we aim to create the chatbot especially for the Thai college, our chatbot can understand and answer in the Thai language.

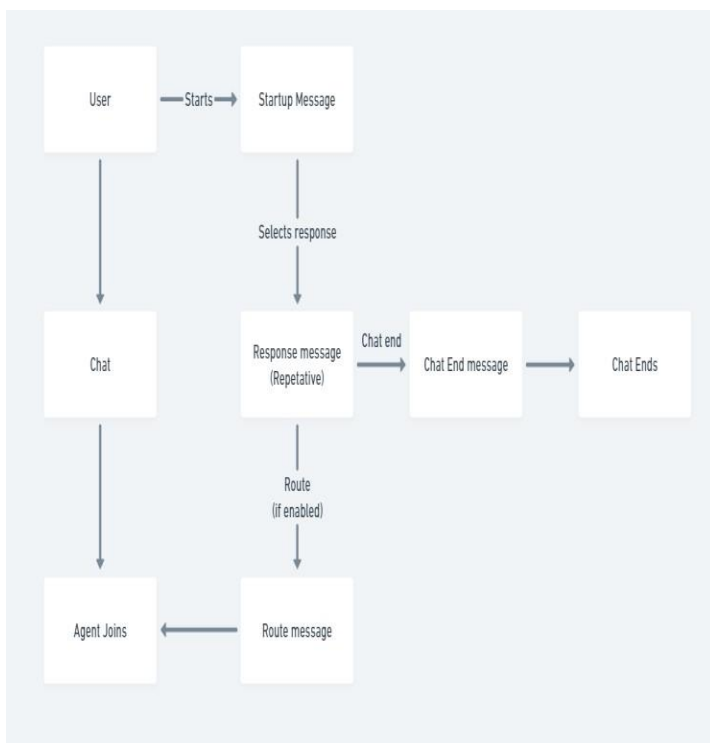
Chatbots [8] utilize AI to arrive at counterfeit intelligence helping them to comprehend the user question, what's more, give a suitable reaction. The chatbots are created utilizing the Artificial Intelligence Markup Language (AIML) for imparting or cooperating with the user. This comprises software that will be made up of utilizing Artificial Intelligence and will assist the user in chatting with a machine. The user can ask the systems like typically did to other humans. The [9] knowledge of chatbot are stored in the database. The chatbot consists of core and interface that is accessing that core in relational database management systems (RDBMS). The database has been employed as knowledge storage and interpreter has been employed as stored programs of function and procedure sets for pattern-matching requirement. The interface is standalone which has been built using programming language of Pascal and Java.

III. PROPOSED SYSTEM

A. Architecture of Chatbot System

The proposed Architecture of Customer support Chatbot System in described in Fig given below:

We have proposed a SaaS based application to provide high tech solutions. We are providing chatbot as a plugin to businesses. The system makes use of Angular, Nodejs and sql server. A chatbot interface is designed and used with iframe to link it with websites. Businesses would have their own unique id and can access and integrate the chatbot with their website in absolute no time. Onboarding process is very simple, an admin dashboard is designed to onboard businesses and create their unique id and a root user account. Businesses on logging in with their root accounts would then be able to access the agent dashboard and there can set up the configurations and questions-response data.



Socket.io is used to exchange messages between user and agent in real time and provide smooth user-agent interaction. Each user conversation appears on the sidebar of the agent dashboard as soon as the chat ends or the chat routes to an agent in real time. The system provides high end user experience to both customers and agents, any new user with no prior knowledge of technology can easily operate the system.

B. Response structure

We have defined two types of chatbots, one with agent and other with agent-support. Agent based chatbot does not have the chat-with-agent feature. They would only support bot-based chat and agents from agent-dashboard could view the chats and sessions. On the other hand, Agent-support based chatbot provides the functionality of letting users talk with the agent of that business. Users can route to the agents and start the conversation provided the user is routed to an agent and the agent has accepted the chat.

Businesses from their root account can create the agent's account. Here we have defined two roles of agent, one is agent and the other one is agent-support. Normal agents can only see the bot-based chat and support agents are the ones whose users are routed and can chat with users. Businesses can edit, add or disable any response without interrupting current chatbot flow dynamically. Chatbot settings can be changed dynamically from the agent dashboard.

Configurations like NoResponseTimeout, NoResponseTimeoutMessage, InputParameters etc are set to manage chats, each has an important objective. Chat will be ended by the system if the user does not respond for some specific time set as NoResponseTimeout value in configuration and while ending user will be noted with an ending message set as NoResponseTimeoutMessage in the configuration. The chatbot system also has the feature of sending mails to the users wherever required. Chatbot systems can also take input from users wherever any response is set to ask for an input. Such vital information of users are recorded in different tables in the database and are provided to agents in a summarized way. These details of users define each user uniquely.

IV. SYSTEM EVALUATION

The proposed chatbot was specifically developed to respond to questions on all domains as the businesses based on. When any business needs our chatbot system, the system would be trained on the dataset of the domain based on the business. Task Completion: The chatbot system should be able to effectively complete tasks and provide accurate information to users. For example, if a user asks about a product or service, the chatbot should be able to provide the correct information.

Customer satisfaction: Users should grade their satisfaction with the chatbot system after interacting with it. You can do this by filling out surveys or feedback forms.

Accuracy: The chatbot system should provide accurate information that is pertinent to the user's inquiry. This can be assessed by contrasting the system's output with the accurate data.

Response Time: The chatbot system should respond in a timely and effective manner. There shouldn't be an excessively long response time for users.

Error Handling: The chatbot system should be able to handle errors and misunderstandings effectively. If the system does not understand a user's query, it should prompt the user to rephrase or clarify.

[8]Hrushikesh Koundinya K,Ajay Krishna Palakurthi,Vaishnavi Putnala “Smart College Using Python”,2022.

Personalization: The chatbot system can provide a personalized experience for users by recognizing their previous interactions and preferences. This can be done by integrating machine learning algorithms that can learn from user data.

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V. CONCLUSION

Chatbots or smart assistants with artificial intelligence are dramatically changing businesses. There is a wide range of chatbot building platforms that are available for various enterprises, such as e-commerce, retail, banking, leisure, travel, healthcare, and so on but not an integrated service like this.Chatbots can reach out to a large audience on messaging apps and be more effective than humans. They may develop into a capable information-gathering tool in the near Future .

In the future , the scope of our chatbot can be increased by adding functionalities such as having direct calls or video calls with the agent so that the agent can solve user problems remotely. In most countries people only know their native language, so for them it become difficult to communicate for example In Japan 60 percent of their population do not speak and understand English for that reason, In future we are going to add the various native languages, so that the user can switch to their language according to their preferences.

VI. REFERENCES

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