Research Paper on Chatbot Development Using Python. Galgotias University

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Abstract:

A chatbot is an artificial intelligence computer program which performs communication using audio and video system. A person can ask any questions and chatbot will answer accordingly. Nowadays a chatbot is highly popular and takes speed as a computer communication application. Chatbot system is in trend, thus it is being used on many websites. With the chatbot, one doesn't have to wait to talk to the customer helpline, they don't even have to search for shopping through Websites. A chatbot is used in many areas like order food, product suggestions, customer support, weather, personal finance assistance, scheduled a meeting, search and track flights, send money, and many more. The mainobjective that we will discuss in this paper is about creating a web API, and also about sample
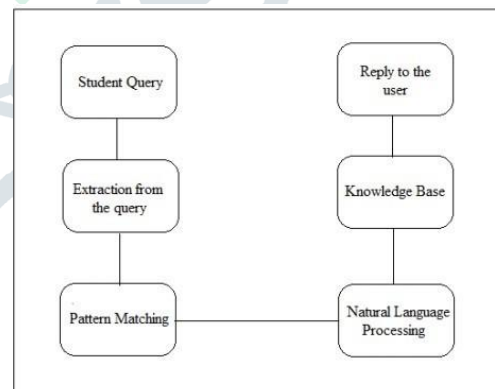
web and text messaging interfaces that demonstrate the use of API. In this research paper we are trying to understand these Chatbots and understand their shortcomings.

As a conclusion, it lies in answering frequent and common questions by people and providing the answerto these questions at any time the person wants.The technology at the core of the rise of the chatbot is natural language processing ("NLP"). Recent advances in machinelearning have greatly improved the accuracy and effectiveness of natural language processing, makingchatbots a viable option for many organizations. This improvement in NLP is firing a great deal of additional research which shouldlead to continued improvement in the effectiveness of chatbots in the years to come.A simple chatbot can be created by loading an FAQ (frequently asked questions) into chatbot

Keywords:

Chatbot, Answer agent, Machine Learning, Intelligent, Natural Language Processing,Artificial Intelligence.

Introduction:

Chat has become the center of focus in this current era, thus the bots are being utilized to deliver information engagingly and conveniently. A chatbot is standout amongst the most progressive and promising tools of communication among people and machines. Famous chatbots like Google Assistant, Amazon Alexa, Siri, Facebook, Slack, and many more are in trend. These are very much helpful, but in this era of enhancing technology, day by day technology gets updated, and accordingly, user expectations also increase. A user wants more automation inthe chatbot. Although every system is not perfect there is always a flaw in the system, so as in the chatbot there are some problems that the user has experienced while using a chatbot.Chatbot can be described as an answering system where a system will be able to answer.

The chatbots are sufficient to fool the users in believing that they're talking to a human being, they've a very limited knowledge base at runtime and have no means to keep track of all the conversations.

questions or statements submitted by users andallow usersto control over the content to be displayed.

A bot is trained on and according to the training, based on some rules on which it is trained, it answers questions.It is called ruled based approach. Using these ruled based approach, creation of these bots becomes relatively straight forward. But it is not sufficient for the bot to answer questions whose pattern does not match with the rules on which it is trained. The language by which these bots can be created are Artificial Intelligence Markup Language(AIML). It is a language based on XML which allows the developer to write the rules which bot will follow.

Description:

A CHATBOT is a normal application which has a database, it has an app layer and APIs to call the other external administrations. However, bots cannot comprehend about what the customer has planned. It is a very much common problem that must be tackeled. Bots are generally trained according to the past information which is only available to them. So in most of the organizations, chatbot maintains their logs of discussions so that they can understand their customers behavior. Developers utilize these logs to analyze what clients are trying to ask. Developerscoordinate their with their client inquiries and reply with the best appropriate answer with the blend of machine learning tools and models. Training achatbot is very much faster and also on a large scale as comparedto human beings. A customer support chatbot is filled with a very large number of The proposed system simply takes the query from the user which can be a student or a parent, the chatbot will match the queries of the student or parent with the knowledge base and the appropriate response. The users can raise any college connected activities through the College Enquiry Chatbot. The Chatbot systemanswers to the query as if it's answeredby the real person. The chatbot replies with the assistance of a decent GUI that suggests that as if a real person is rebuke the user.

conversation logs which help the chatbot to understand what kinds of questions shoul be asked and answers should be given. While a normal customer service representatives are given manual instructions which they have togo thorough with. The working of chatbots isbasedon three classification methods:

1. *Pattern Matches*: The pattern matches to group thr texts are utilized by the bots and it so it produces an appropriate response to the customers. The standard structured model of these patterns is "Artificial Intelligence Markup Language".

2. *Natural Language Understanding (NLU)*:Finding the way to convert the user's speech or text into structured data is called Natural Language Processing. It is used toget relevant answers for the customers.

To develop a chat bot one must be very clear about what one wants from that chatbot. Often they are developed for business platforms like Net Banking sitesto handle costumer Q&A. Another type of chatbots widely developed and used are smart assistants like SIRI, Google assistant, Alexa, Cortana etc.
Following is a simple class diagram of chatbot showing basic functionalities of it:
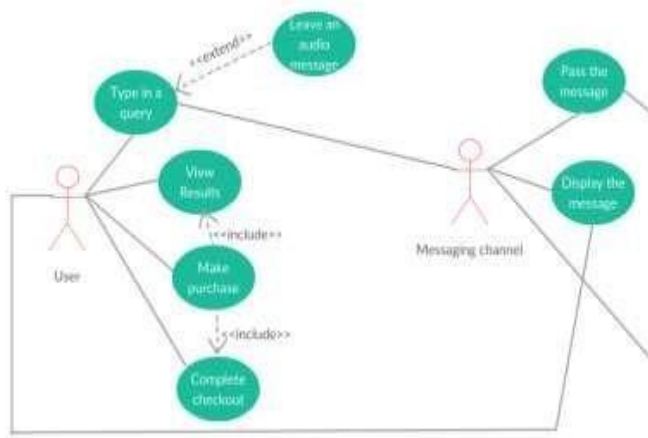
The above image clearly explains how a chat chatbothandles costumer Q&A in a business platform.

With the help of following class diagram we canunderstand the functionalities of a chat bot
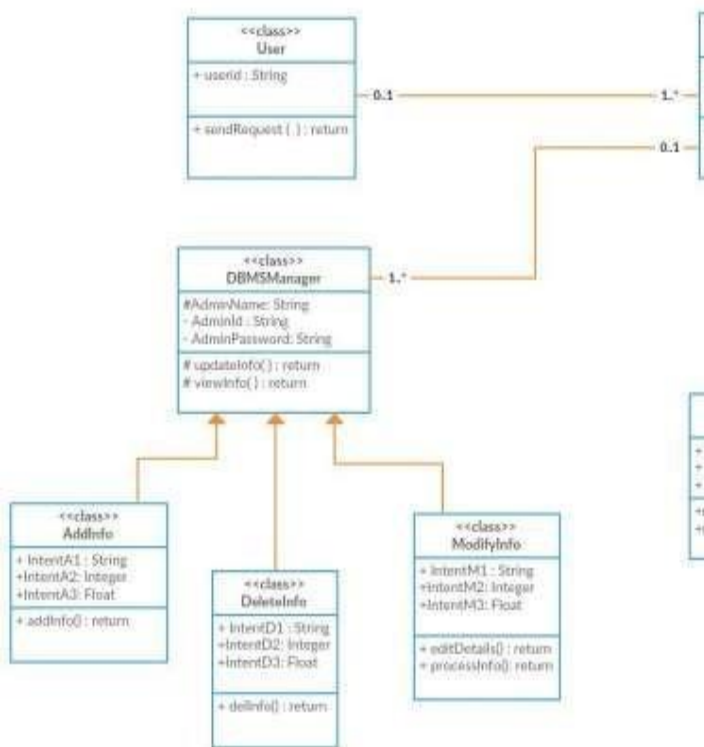
The above image shows the class diagram of facebook chatbot. Both diagrams also show the difference between mentioned verities of chatbots.

Shortcomings of chatbots:

1. One of the significant limitations of the Chatbots is that they do not understand human context. Many times this behavior of Chatbots leads to an irate customer because Chatbots are programmed in such a way that they can only perform functions that are taught to them.

2. One of the main limitation of the Chatbot is that they cannot make decisions. Due to this lack of decision making ability, the are not able to differentiate between what is good and what is bad. Decision making fails inthis case.

3. Chatbots are not able to do customer retention. A customer retention ability plays a very much vital role in everyorganization. Retaining the customers holds a more important role than making new customers also. A Chatbot only tries to help the customers at the level of which it can do. It has a very less capability in retaining customers.

4. Most of the customers do not want to proceed their chat with the Chatbot as soon as they understand they are chatting with Chatbot because Chatbot have a same answer for many type of query and costumer goes off unsatisfied. Chatbots can be easily identified because they have same type of answer for most of the query. For the data which chatbot do nat have ,they ask for the apology.

5. Chatbots can surely save a lot of time and money but installing a Chatbot can empty your bank account because because it is very much costliar. Youwill have to hire proper professionals who have knowledge and have rightly programmed the Chatbot that can match the integrity of your organization.

6. One of the major limitation of the Chatbots is the lack of emotion. They cannot connect with the customers because they do not understand aboutthe seriousness of any topic or how low is the situation is. This effects the business and crucial growth of theorganization.

7. The Chatbots answers the queries only by the data which is available in the system. One of the harsh truth is that Chatbots have a zero research skills. They cannot research on any topic and give answers.

Conclusion:

A database is used in many applications for the connection of Chatbots.Every customer or user needs appropriate answers and so database is used to so that purpose can be solved. Human language can be transformed into the data transformation with the help of NLP. NLP helps to transform with a blend of text and patterns because of which it gets applicable responses. There are many NLP applications and programming interfaces and services that helps in development of Chatbots. And make it possible for all sort of businesses
– small, medium or large-scale industries. The primary point here is that smart bots can help increase the customer base by enhancing the customer support services, thereby helping to increase sales.

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