CHATBOT: THE FUTURE OF WORLD

Chatbots are Trending

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Abstract:　We Present Jarvis, a closed domain chatbot trained for responding to the business queries. As we know that the business is heading in such a manner of profits every day, the time is the major concern. So chatbots are widely popular. The capability of catching speed as an application of computer communication is creating a stand for chatbots in the business. Chatbots are computer program that interacts with the users using natural languages. There are several frameworks for building a chatbot (Rasa, Botman and Google Dialog flow). In our proposed system we have used the rasa framework. The main objective of the paper is to design and implement a chatbot for business.

Keywords — Chatbot, Communication, Interactions, Query, Rasa-Framework, Pattern Matching, Natural Language Understanding(NLU),ApplicationProgramInterface(API),Database,ChatbotResponse.

INTRODUCTION

In recent years, Computer is like an oxygen for a human daily life. Computer plays a very important role in shaping a human life and reducing the work of a human. Hence computer become an essential device in the major sectors like railways, banking, army, research, electricity and space study. But their vital role can be observed in medical industry as they help doctors to diagnose the disease quickly & more Efficiently and help them to resolve the problem safely. A chatbot is a computer program or technology that allows human conversation through voice, text or sometimes both. A chatbot sometimes can also be called as a chatterbot and it has Artificial Intelligence features.

A chatbot is implemented using pattern comparing, in which the order of the sentence is recognized, and a saved response pattern is acclimatize to the exclusive variables of the sentence. They cannot register and respond to complex questions and are unable to perform compound activities [1]. Chatbot is relatively a new technology. So, the purpose of chatbot is to ease the pain that current business, industry and medical field facing today. Initially chatbot technology was introduced as an artificial conversational agent [2]. The application of a chatbot can be seen in various fields in the future [3]. Hence, they are used to support and improve the business scale of industries, and the proposed paper covers the technique used to design and implement a chatbot.

DESIGN OF CHATBOT

Generally, the design of the chatbot means, how does the chatbot interacts with the user? and how will be the conversation continues with the human and chatbot. The chatbot must be able to understand the user intention of query and chatbot must be able to continue the conversation smoothly by answering all the queries of the user. The design of a chatbot is as represented using a "User Diagram", as follows:
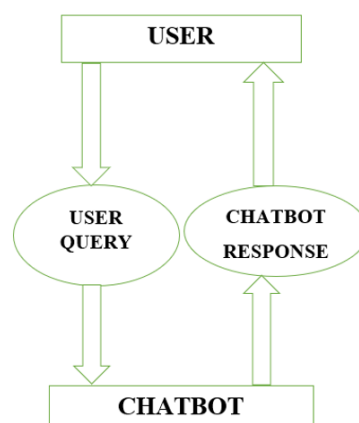

Fig.1: Use Case Diagram of the Chatbot Design

The set of facts to be remembered, while designing the chatbot system:

   A. Selection of the OS (Operating System)

There can be number of operating system available in the market, but the windows are the best operating system for any of the project. Hence windows are used as an operating System in chatbot Project.

   B. Selection of the Software

There are many software's available for a programming language to work on, but in the project, we have used Spyder (IDE TOOL) for developing the code in python.

   C. Selecting the Framework

Rasa is an open source conversational AI framework, which is been used in the project, because rasa is not a rule-based framework and i need not to be worried about putting my data into the clouds. Rasa mainly has two components in it namely Rasa NLU and Rasa Core.

   D. Creating the Chatbot

To create the chatbot, a program needs to be written in one of the programming languages. In the project, python is used as a language for the creation of the chatbot.

   E. Pattern Matching

Pattern matching is the technique used in the Artificial Intelligence for designing a chatbot.
If the user query is matched with the query that is stored in the database and the corresponding response will be driven from the database. Teradata is used as the database in the project.

   F. Robust and Simple

The chatbot is designed in such a way that, chatbot should be efficient and it should be capable of picking up the robust tasks and reply with the appropriate response. If the user query is not matched with the data in the database, it will reply with no data found for the query.
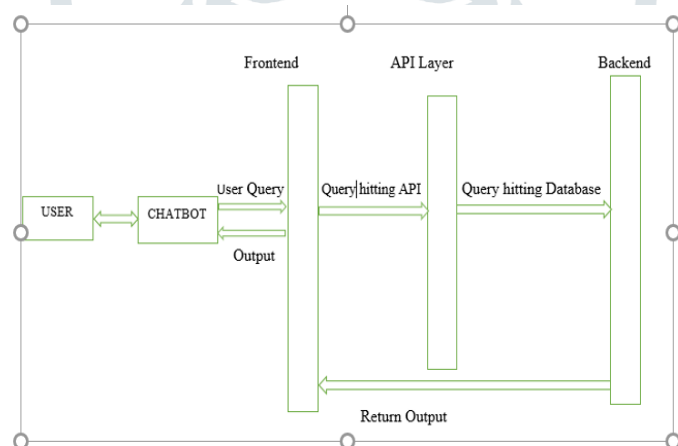

Fig.2: Sequence Diagram of the Chatbot Design

Hence, it's clear that the sequence diagram is very important in any of the projects.

ARCHITECTURE AND IMPLEMENTATION

A. Fundamental Design Technique

a) Creating the dialog box

While creating the dialog box, the packages are imported and the size of a dialog box and text area inside the box is standard. As the conversation goes on the vertical bar is used to scroll down and view the conversations [3].

b) Database

A database is a collection of information that is organized, so that it can be easily accessed and managed.

Teradata is a fully scalable relational database management system (RDBMS) produced by Teradata corporation. It is based on symmetric multiprocessing technology combined with network.

SMP is the processing of programs by multiple processors that share a common operating system and memory. The data path and memory will be shared in the symmetric multiprocessing.

Teradata is selected as a database in my project just because of the following reason,

   i. It is suitable for large data warehousing applications.

   ii. It has linear scalability, unconditional parallelism, multifaced parallelism, parallel-aware optimizer and intelligent data distribution.

iii.   It has the capability of handling large data and complex queries.

B. Architecture of Chatbot System

Chatbot is a computer application which uses artificial intelligence to mimic human conversation. It helps the user to get the desired response. The program is implemented using python programming language.
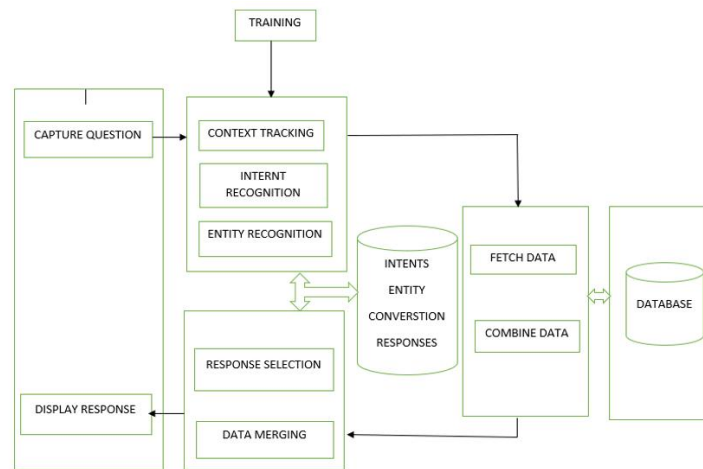

Fig.3: Architecture of the Chatbot System

When a user ask the question, it will be captured and sent to a next process. i.e Context Tracking, Intent recognition and entity recognition.
Intent is the core part in the query and the entity is like a subpart of the user query. There can be a numerous number of entities present inside the intent.

For ex: "Best restaurants for Indian cuisine in Japan".

Here, Restaurants is an intent and the Indian cuisine is an entity. i.e, A restaurants can have many different cuisines in their serving list [4]. Hence, so an intent can have a list of entities in it. Upon next certain training sample will be feed into process [5]. Later, fetch data process will be activated, and data will be fetched from the database and gets combined with the familiar data. Finally, it yields an optimal data as a response to the user.

CONCLUSION

The internet provides various ways to get information and has radically changed the way human communicate. In the fast-growing world of AI, consumers are getting technological help in all facets of their lives using the chatbot. Chatbots sole purpose is automation and to bring out a good customer experience. So chatbots can be offered to people in two ways via application or Web-based. Out of these, applications are widely used in customer service platform, because they reduce the work and time of business by having the quick accessibility and availability. Hence, chatbot's provide the best human touch for a user being simple in behavior. In chatbot, users can easily type their query in natural language and get the optimum response. The business purpose chatbot should be simple, user friendly and must be able to understand the user query and his intention of querying. The development and improvement of chatbot design grow at an unpredictable rate by the variety of approaches and design. The optimal design should need to be selected and implemented in the projects. Chatbots have enhanced the human life in all possible ways and make the human life better day by day. Hence in this paper, information about the design, implementation and the architecture of the chatbot has been presented in the simplest way.
Chatbots also bring every-data of the company under a single space, yielding a maximum profit for the company by reducing human intervention and the work. Chatbot helps to build a relationship with a customer. Chatbots are not only used in the business, they are also used in applications such as ecommerce customer service and call centers. One such example is "ALICE" (Artificial Linguistic Internet Computer Entity).

FUTURE WORK

Chatbots are also referred to as chatterbot or virtual assistants. It is a rudimentary form of artificial intelligence software that can mimic human conversation and make us feel comfortable while using it in various fields such as education, business, finance, industry, sports, entertainment and also in Health-care by solving health related problems of the patients [6]. The information necessary for education can be stored in the database and can be retrieved any time by querying the bot in the natural language itself. Hence, chatbots can also be used as a effective educational tool. Chatbots results in smart conversation and it is advancing at an unprecedented rate with new development and features in coming days by being flexible for the users. It's not that effective to say that evolution of the chatbot will take place in 2019 or 2020. But according to the survey report 80-85% of the business will use advanced chatbot in 2022.And, it's predicted that the chatbot market size is projected to grow from $2.6 billion in 2019 to $9.4 billion by 2024.Chatbots are the future, because it performs job effectively and continuously. Which helps an organization to be fatigue-free. But the organization should be having a enough data with them to show as an output. Hence in the future the

sector for data handling in a company should be given more priority. The research and development should be involved in the data sector too. So, wherever you want to involve the chatbot there should be an availability of the data in bulk.

Hence, data is the primary thing for a chatbot to work and progress. So future work should be more focused on knowledge discovery in data and data warehousing.

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