



## JARVIS DESKTOP ASSISTANT USING AI

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**Abstract :** This In the modern world, we teach our machines to think like people and do tasks on their own, replacing the work that only humans can do. Based on this circumstance, the idea of a voice assistant that can carry out various tasks for people using just their voice emerges. Specific commands sent by the user to the virtual assistant have the ability to filter out the Command and return pertinent data. Using emerging technologies like virtual reality, augmented reality, voice interaction, etc., people are changing how they connect with the internet globally. When an analogue signal is transformed to a spoken signal and turned into a digital wave, this is called voice control. A significant surge in the adoption of smart phones led to the Great use of voice assistant like Apple's Siri, Google's Assistant, Microsoft's Cortana and Amazon's Alexa etc .Voice assistants Are built using technologies like voice recognition, speech synthesis, and Natural Language Processing (NLP) to provide In define applications to the users to make their life easy and comfortable.

**IndexTerms - voice assistant, virtual reality, Natural language processing**

### 1. INTRODUCTION

Virtual reality, augmented reality, voice interaction, IOT, and other emerging trends are altering how people connect with the outside world and revolutionising digital experiences. One crucial development is voice control. Interaction between humans and machines, which was made feasible by advances in artificial intelligence. With the use of technologies like artificial intelligence, machine learning, neural networks, etc., we can train our machines to perform their tasks on their own or to think like humans in the modern era. We can also communicate with our robots using virtual assistants. Due to the widespread usage of smartphones, voice assistants like Apple's Siri, Google's Assistant, Microsoft's Cortana, and Amazon's Alexa have made a spectacular comeback recently. Natural Language Processing (NLP), speech synthesis, and voice recognition technologies are used by voice assistants to uses technologies like voice recognition, speech synthesis, and Natural Language Processing (NLP) to provide various services which help users to perform their task using their machine by just giving commands in voice format and also with the help of Voice Assistant there will be no need to write the commands again and again for Performing particular task.

### 2. LITERATURE SURVEY

At the Seattle World's Fair in 1962, IBM displayed a device called Shoebox IBM that could recognize spoken digits and then return them by lighting lamps marked with the numbers 0-9. This marked the beginning of the development of virtual assistants. It was capable of understanding 16 words in all. The majority of voice assistants currently available are designed for mobile devices, such as smartphones from Google for Android, Apple for Siri, and Amazon for Alexa. These assistants all use language processing to carry out their functions. Microsoft's Cortana, a voice assistant also available on desktop, is another option. The purpose of all of these voice assistants, which is voice initialised processing, is the same. As a result of these advancements been a result of the same new age technology- Artificial intelligence. At the core of all these assistants is a simple synchronous cycle – Voice commands and hear responses. Sutar Shekhar, and various researchers have jointly come up with an application which implements most of the system functionalities through voice and they also included the feature of sending a message with their voice command to help those people who are visually impaired. They aim to continuously develop their application so as to m a finally have an engine which can also recognise different local languages like Bengali, and a number of dialects of prevalent Hindi. Miss. Namita Mhatre (1) and others proposed a system which will let the individual fetch meanings of words through synthesised sounds. Boella(6) and Lesmo(6) claim to have come up with an application that is able to implement spoken commands even without an internet connection thus, giving us flexibility over data costs.. As there is no need of internet connection this feature makes their solution faster than many of the high-profile engines like Alexa and Cortana. Nguyen A(7) and Wobcke W(7) have developed a solution for Android by using open source services, that can help programmers who are facing physical challenges in development. They used producer-consumer paradigm at the client side to integrate tasks that can be operated over an android device. On analysing these systems, we concluded that they are basically designed to work on a android platform, that's why we decide to develop a software which will work on the desktop.We used programming language python because it is one of the most robust programming languages and with the help of pytsx3 and speech recognition API's the development of software become easier and work with better accuracy. To help the visually impaired people our software always repeats the command which the user gives to the system so that the users are aware whether they have inserted the correct command or not. On the other hand, it also keeps on listening and fulfills the demand of the user until the user decides to quit.

Additionally, there are some existing systems from which the idea of creating an application of chatbot (virtual personal assistant) was inspired. A.L.I.C.E. The Artificial Linguistic Internet Computer Entity (A.L.I.C.E.) is one of the most well-known chatbots that uses a pattern matching strategy. Online resources for the AIML files for ALICE include categories for things like

music, art, and philosophy. In order for our chatbot to function fundamentally, these AIML files are required. A second original AIML file for the category "Meetings" has also been created, and it contains answers to inquiries specifically about meetings. The pattern matching foundation of the chatbot is thus using AIML files as the project focuses more on the scheduling module.

### 3. PROPOSED SYSTEM

#### 3.1 SPEECH TO TEXT:

A Piece of software used that Converts audio to text. It Doesn't understand just Anything you might say.

#### 3.2 TEXT ANALYZING:

Converted text is just letters for computers. A piece of software converts Text to something Understandable for the Computer. Computer understands the Command, so Virtual Assistants like Siri converts this text to a computer command. VPAs map the words to Functions and parameters to create a command that the computer can understand.

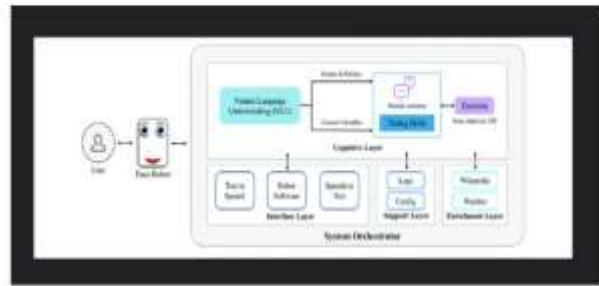


Fig. 1 Architecture

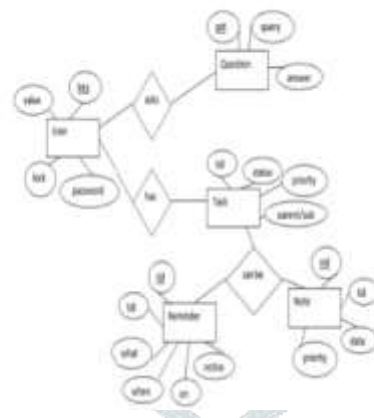


Fig. 2 ER diagram

It demonstrates the connections between various entities and the characteristics that distinguish them. An ER diagram can be used in the context of a chatbot to show the various parts of the chatbot and how they are connected. Entities like users, messages, chats, and responses may be included in a simple ER diagram for a chatbot. Lines, arrows, and crow's feet notation are just a few examples of the symbols that can be used to indicate the relationships between these things. One person may be able to send several messages, for instance, if a user entity and a message object are linked in a one-to-many connection. The message entity may have a many-to-one link with the discussion entity, suggesting that multiple messages may be a part of the same conversation. Lastly, the conversational participant be connected to a message entity with a one-to-many relationship, indicating that one user can send many messages. The message entity might be connected to a conversation entity with a many-to-one relationship, indicating that many messages can belong to one conversation. Finally, the conversation entity might be connected to a response entity with a one-to-many relationship, indicating that one conversation can have many responses. Overall, an ER diagram can be a useful tool for understanding the structure of a chatbot and designing its underlying database.

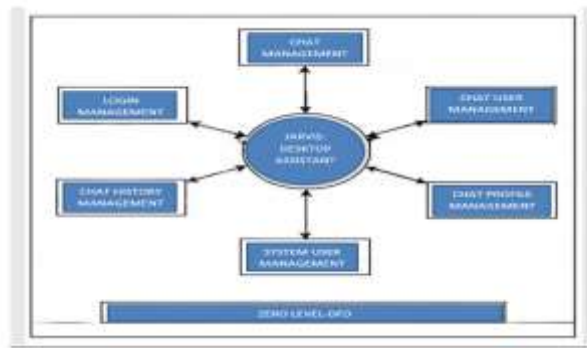


Fig. 3 Dfd level 0

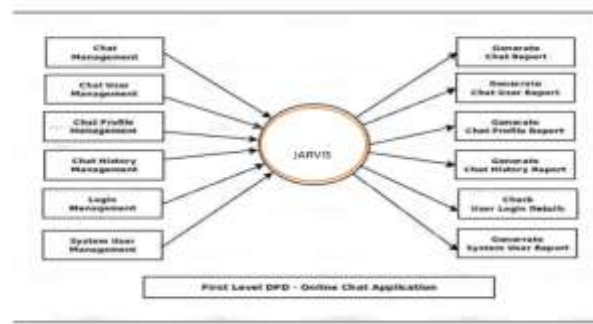


Fig. 4 Dfd level 1

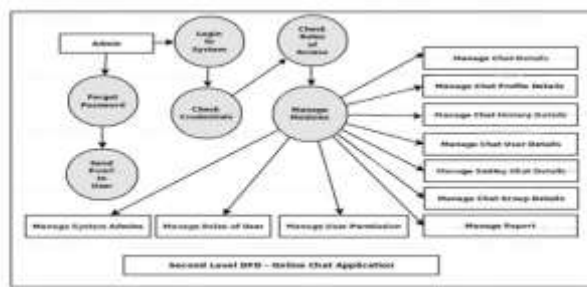


Fig. 5 Dfd level 2

A DFD can be used in the context of a chatbot to illustrate the various parts of the chatbot and how they communicate with one another and other systems. A chatbot's fundamental data flow diagram (DFD) may comprise internal systems like a chatbot platform or database as well as external systems like users, messages, discussions, and responses. The graphic would depict the processing and transformation of data as it moves between these entities and systems. A DFD might, for instance, demonstrate how a user's communication to a chatbot is first received by the chatbot platform and then forwarded to the chatbot itself. The chatbot processes the message, possibly using natural language processing or other algorithms to determine the user's intent, and then generates a response. The response is then sent back to the chatbot platform and displayed to the user. Overall, a DFD can be a useful tool for understanding the flow of data within a chatbot system and identifying potential bottlenecks or areas for optimization.

It can also help ensure that the chatbot is designed in a way that is scalable, efficient, and user-friendly. A more detailed DFD for a chatbot might include additional entities and processes, such as authentication and authorization, user management, and analytics tracking. It could also show how data is stored and retrieved from a database, and how it is processed and transformed within the chatbot itself. For example, a DFD might show that when a user logs in to the chatbot, their credentials are authenticated and their user profile is retrieved from the database.

The chatbot might then use this information to personalize the user's experience, such as by suggesting products or services based on their previous interactions. In addition to showing the flow of data within the chatbot system, a DFD can also highlight potential security risks or areas where sensitive information might be exposed. This can help ensure that appropriate security measures are in place to protect user data and prevent unauthorized access. Overall, a DFD can be a valuable tool for designing, analyzing, and optimizing the flow of data within a chatbot system, and can help ensure that the chatbot is designed in a way that is secure, efficient, and user-friendly.

#### 4. NATURAL LANGUAGE UNDERSTANDING

It consists of three concepts:

##### 4.1 Entities:

Entity can be considered as the main ideology of your chatbot. It can be a payment system chatbot or customer support chatbot or a resume bot as proposed in this paper.

#### 4.2 Intents:

Intents are basically the outputs or the responses that a chatbot gives on encountering an input by the user. In short these are the actions that a chatbot performs when a user gives a text input.

#### 4.3 Context:

In NLU algorithm whenever a sentence is processed or scanned, the system does not have any information about the past conversations of the user. It means if a user asks a question, and the chatbot has given a response to that question, but, the chatbot will not have a record of the question that has been just asked. So for distinguishing the parts of the conversation, the states of the conversation are recorded. A state can be a flag like “school studied” or parameter such as “educational qualification”.

### 5. NATURAL LANGUAGE PROCESSING

In Natural Language processing (NLP) chatbot uses a collection of steps that can be a collection of questions to transform the user's input text into relevant data and then give an appropriate answer or response. These are the steps involved in Natural Language Processing:

- Sentiment Analysis:

This analysis keeps a track on the conversations to check if the user is having a good quality experience.

- Tokenization:

The NLP separates the sentence into different words or tokens. NLP classifies and divides a string of data into small parts or tokens. They are differently used for application purposes.

- Normalization:

In this step the chatbot looks for misspelled words or any kind of typing mistakes in the text input by the user.

- Dependency Parsing:

In this step the chatbot finds out the subject, verb and object of the sentence given by the user. It looks for nouns and related or dependent phrases in the user's text input to understand what the user is trying to convey. Similar to all the web applications present today, chatbots also need to have a database. The database is the collection of information and facts that is used to generate a suitable and most appropriate response to the user. The data related to all the activities are stored in the database. So, NLP converts common human language to relevant information. The information can be a collection of patterns and relevant texts that can be applied to get a proper response.

### 6. CONCLUSION

In conclusion, chatbots are a common tool used by companies and organisations to interact with their consumers or customers. They make customer service and sales employees less busy while providing a more effective and customised experience. The target audience, required functionality, data structure, scalability, security, and user-friendliness must all be carefully taken into account while designing and developing a chatbot. A chatbot system's data structure and flow can be designed and understood with the use of ER diagrams and data flow diagrams, which are both useful tools.

When using a chatbot, it's crucial to find a balance between automation and human interaction. While chatbots are efficient at managing repetitive jobs, not all human interactions may be able to be replaced by them. Chatbots are projected to grow in sophistication and effectiveness as technology develops further thanks to developments in machine learning, natural language processing, and other areas.

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