Desktop Voice Assistant Using Artificial Intelligence

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Abstract

To make calls, send emails and texts, search things online, give directions, fold and unfold apps, set appointments on our calendars, and initiate or complete various tasks. For those in the e-Commerce industry, there is a great way to thrill customers, by providing them with the ease of online shopping on any device using voice assistant technology-enabled chatbots.Sometimes consumers requires assistant at odd hours, but it's not possible to send them such assistance physically. At these situations, the virtual voice assistants help a lot by solving the problems of the consumers. While interacting with people or with some organization online, most people have to deal with language barriers. Personal assistant technology integrated with automatic translation helps to break the language barrier. Artificial intelligence assistant technology helps your business or start-up to up to date

regular operations. Things such as remembering important appointments, deadlines, arrangement etc. can be all triggered using specific voice commands. AI is capable of picking up teasing indications required to combine the data and give results at a moment's notice. Moreover, the voice feature frees up your arms so that we can complete tasks simultaneously. The car voice assistant experience has enabled drivers to have a safe hands-free experience: making and receiving phone calls, managing music, and navigation, taking out orders, booking services, and scheduling appointments. Voice assistant helps disabled persons (like persons who have issues with upper limb mobility or eyesight) to perform various tasks. Recruiting a personal voice assistant gives you enough time to alleviate, take a check and get a grip on your life by finding balance. Once you embark on an enterprising venture family time is restricted to those occasional family trips. Get ample amount of time every day to sit at the dinner table and have a proper conversation with your family by hiring a virtual voice assistant.

KEYWORDS: Artificial Intelligence, Python, VS Code, Voice desktop Assistant, **Pyttsx3** Libraries.

I. Introduction

Anything that makes a machine act more intelligently can be called Augmented Intelligence or Artificial intelligence. AI should not attempt to replace human experts, but rather extend human capabilities and accomplish tasks that neither humans nor machines could do on their own. Keeping this objective of Augmented intelligence or Artificial Intelligence, one of the best things that are created to extend the capabilities of a human being is known as a Virtual voice assistant that can be present on the desktop, mobile phone or can be used as a different device.

A virtual voice assistant using AI is an application program that understands natural language voice commands and completes tasks for the user. Google Assistant or Alexa can be considered the most famous application of virtual voice assistant.

II. LITERATURE SURVEY

The history of AI contains different and various periods, like-the Maturation of Artificial Intelligence (1943-1952), The boom of AI (1980-1987), and The emergence of intelligent agents (1993-2011). So, The phases start with the maturation period of AI.

The year 1943: The first work which is now recognized as AI was done by Warren McCulloch and Walter pits in 1943. They proposed a model of artificial neurons. Year 1949: Donald Hebb demonstrated an updating rule for modifying the connection strength between neurons. His rule is now called Hebbian learning. Year 1950: The Alan Turing who was an English mathematician and pioneered Machine learning in 1950. Alan Turing publishes "Computing Machinery and Intelligence" in which he proposed a test. The test can check the machine's ability to exhibit intelligent behaviour equivalent to human intelligence, called a Turing test. Then there comes the golden years which were filled with Early enthusiasm (1956-1974). The year 1966: The researchers emphasized developing algorithms which can solve mathematical problems. Joseph Weizenbaum created the first chatbot in 1966, which was named ELIZA. The year 1972: The first intelligent humanoid robot was built in Japan which was named WABOT-1

Then there happened a boom of AI (1980-1987)Year 1980: After AI winter duration, AI came back with "Expert System". Expert systems were programmed that emulate the decision-making ability of a human expert. In the Year 1980, the first national conference of the American Association of Artificial Intelligence was held at Stanford University. After that the emergence of intelligent agents (1993-2011) were invented.Year 1997: In the year 1997, IBM Deep Blue beats world chess champion, Gary Kasparov, and became the first computer to beat a world chess champion.Year 2002: for the first time, AI entered the home in the form of Roomba, a vacuum cleaner. Year 2006: AI came in the Business

world till the year 2006. Companies like Facebook, Twitter, and Netflix also started using AI. Then there started a new era of artificial intelligence with the invention of Deep learning, big data and artificial general intelligence (2011-present) Year 2011: In the year 2011, IBM's Watson won jeopardy, a quiz show, where it had to solve the complex questions as well as riddles. Watson had proved that it could understand natural language and can solve tricky questions quickly. Year 2012: Google has launched an Android app feature "Google now", which was able to provide information to the user as a prediction. Year 2014: In the year 2014, Chatbot "Eugene Goostman" won a competition in the infamous "Turing test." Year 2018: The "Project Debater" from IBM debated on complex topics with two master debaters and also performed extremely well.

[1] Most of the scientists believe that an intelligent system is not capable of representing human emotions like love or hate, and on the second thought there is also no need for a system to willfully become generous or vengeful. Following are the ways to discuss the above statement-

1. AI systems that are programmed to destroy human lives i.e. Autonomous arms. If the wrong persons get their hands on these kinds of weapons then they would be able to cause mass mortalities easily.

2. An AI weapon race will hastily head towards an AI war that is also going to head towards mass mortalities. Well, in order to pilot clear of the thought of being captured by the enemies, these weapons are programmed to be extremely difficult to simply turn off, and that is the reason why human beings are most likely to lose control of such a situation.

3. The second type of case happens whenever we fail to properly orient the AI's goal with ours, which is richly labourious. If you ask a well trained intelligent car to take you to a particular destination as fast as it can, then it might get you there doing literally what you have asked for. If a super intelligent system is tasked with an ambitious geoengineering

project, it might create destruction in our ecosystem.

4. Now as we discussed the above two scenarios, we can say that our concern for the advanced AI isn't avenging but capacity.

5. A striking well informed AI system will be exceptionally satisfying at performing its goals but we do have to align those goals with ours

[2] The ultimate goal is to keep the concussion of Artificial Intelligence in favor to the society which in turn results in triggering the research in many areas like control and security, validation and verification and even also law and economics. Following are the points to justify the above statement-

1. Let's just assume that a system gets crashed down then it will be hard to explain. Now, when it comes to an AI system it becomes really important that the intelligent system does what we have asked it to do specially when it comes to systems lie vehicles such cars, airplane or a power grid or an automated trading system or may be a pacemaker.

2. One of the major short length challenges in order to maintain the safety is to take provision from an Arms Race in Lethal Autonomous Weapons.

3. On the other hand, when we consider the long term impact, a magnificent question arrives that if we succeed in the chase of strong Artificial Intelligence and if an AI becomes more sophisticated than humans could not be able to think what will happen.

4. In 1965 I.J. Good pointed that conniving a wise intelligent system is itself a challenging task. The achievement of such systems could result in provoking an intelligence detonation which will leave the human intelligence way too far behind.

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5. By designing radical latest technologies, and thus produced super intelligent system might be able to help us wipe out poverty, disease or may be even war. But so the creation of such a strong AI system might also be the last, until and unless we learn to align our goals with that of the Artificial Intelligence.

6. Now as we know that an AI has the capability to turn into more intellectual than any human ever, we cant predict how its going to behave. We wont be able to use previous developments in technologies because of the ability to outsmart us willingly or unwillingly.

III. PROBLEM STATEMENT

[6]There are many individuals around us who uses desktop, laptop and other devices. But

1. Many of them are suffering from problems like- some of them have issues with upper limb mobility. It's difficult for them to complete tasks on the desktop without any assistance.

2 [3]There are people who have very poor eyesight, Visual Impairment which is a barrier for them because for this they can't type in the keyboard properly.

3. [4]People with acquired brain injury and autism spectrum disorder are not able to type properly to fulfil their requirements

4. While [7]travelling abroad, while interacting with different people as well as organizations online, most people have to deal with language barriers just because the language and culture may differ from one place to another.

5. People with spinal cord injury [8](SCI) and Muscular dystrophy are not able to accomplish their tasks in desktops or laptops without assistance.

So, these are the real life problems faced by many people around us.

IV. Proposed solution

A proposed solution is an important communication tool because it examines an issue from multiple angles. Here is a solution proposed by us to solve all those real-life problems.

In the above-mentioned problem, all the people who are mostly suffering from different kinds of disabilities are our main focus. As it's not possible for them to operate a desktop or laptop without any assistance, that assistance can be physical or virtual.

So, to solve this kind of problem, we have created a virtual desktop assistant using Artificial Intelligence. This desktop assistant works based on the given voice commands. That means it must contain speech recognition technology. Since speech recognition technology uses the spoken word as its motive power, it can be of extra benefit for those disabled persons to some extent. They can use their personalized desktop voice assistant which will accomplish the tasks given in their own language.

V. Result

[9]So, we have made our personalized A.I based desktop voice assistant using python. There are the following steps we have followed while creating the assistant.

- The first step is opening a Python interpreter. Anyone can use any kind of interpreter, but we used VS Code.
- Install different libraries, some were default libraries, but some were not. Install and import them. [5]The first such library was pyttsx3, it's a library that will help us to convert text to speech. In short, it is a text-to-speech library.
- Use Microsoft-developed speech API- which is SAPI5.
- Write speak() function to convert text to speech. After that create a main() function, and inside this main() Function call speak function.

- Now, we will make a wishme() function that will make the assistant wish or greet the user according to the time of computer or pc. To show the right time, import a module called datetime which is inbuilt library.
- Define take command(), With the help of the takeCommand() function, the A.I. assistant will return a string output by taking microphone input from the user.
- Then we started defining the tasks for the assistant. The tasks we included in it are- searching Wikipedia, opening google, opening youtube, and telling us the right time.

Input-
" *Good Morning. Hello I am Ritu.*
How may I help you?
Listening…
Recognizing…
User Said: Show me the time
Output- The assistant speaks- "It's 11 hours 30 minutes 42 seconds."

VI. Conclusion

This system is designed in such a way that the user can accommodate it in an effortless manner. Our proposed solution – Ritu: The desktop voice assistant using Artificial intelligence using a speech recognition system makes the whole process more secure and more user-friendly. Voice control applications enhancement to all applications running on a system by synthesizing commands set by the user.

Speech recognition technology is a key technology which will provide a new way of human interaction with machines or tools. The advantage of voice commands over advanced devices saves time by pointing to the correct search. The sending of Emails and reading of News can be possible by blind people also. This can do a variety of tasks like tell you the time, open applications, organized files, can give

updates of matches, play game, tell you the location, open hackathons on google .com, do calculations, and updates about the news via Wikipedia and the endless tasks for the user.

Thus making one's life comfortable and at the same time remotely accessible via voice commands.

VII. Future of cyber security

1. [10]Using Artificial Intelligence and the android app development system this project can be compiled into an easy-to-use application. So that with one touch people can use the assistant to solve their problems.
2. In this project we will expand the features of social media for the young generation.
3. Using voice authentication technology the application will provide more security to your device as well as your personal information such that your password, texts, bank details etc.
4. Further adding face authentication technology will be a more secure and more robust overdue time of course.
5. Adding databases such as MongoDB, etc will reduce the no. of lines of codes so that future developers can access it more efficiently.

REFERENCES

1. https://www.ijert.org/a-literature-survey-on-artificial-intelligence

2. https://chatbotsjournal.com/what-benefits-in-a-personal-voice-assistant-technology-5365b31b3637

3. https://services.anu.edu.au/human-resources/respect-inclusion/different-types-of-disabilities

4. https://www.aruma.com.au/about-us/about-disability/types-of-disabilities/types-of-physical-disabilities/

5. https://codewithharry.com/videos/python-tutorials-for-absolute-beginners-120

6. https://www.techtarget.com/searchcustomerexperience/definition/virtual-assistant-AI-assistant#:~:text=Popular%20virtual%20assistants%20currently%20include,Phone%208.1%20and%20Windows%2010

7. https://www.kardome.com/blog-posts/future-car-voice-assistants#:~:text=The%20car%20voice%20assistant%20experience,book%20services%2C%20and%20schedule%20appointments

8. https://www.wishup.co/blog/40-benefits-of-hiring-a-virtual-personal-assistant/

9. https://www.irjet.net/archives/V7/i4/IRJET-V7I41016.pdf

10. Steve Joseph, Chetan Jha, Dipesh Jain, Saurabh Gavali,Manish Salvi "Voice-based E-Mail for the Blind", 2020,IRJET.