



Virtual Integrated Voice Activated Human Assistance

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Abstract— Artificial Intelligence (AI) has made great developments in recent years, and its potential is expanding. Natural Language Processing is one of AI's applications (NLP). Voice assistants employ cloud computing to combine AI and can converse with users in natural language [6]. Voice assistants are simple to use. Smart speakers are the most ubiquitous gadgets with voice assistants. They've only recently begun to be used in schools and institutions. The goal of this study is to investigate how voice assistants and smart speakers are utilized in everyday life and whether there is a link between them and mental peace. They have the potential to be used for educational purposes

Keywords— artificial intelligence, smart speakers, voice assistants, education

1. INTRODUCTION

Emerging technologies such as virtual reality, augmented reality, and voice interaction are modifying people's interactions with the world and altering digital experiences.

Thanks to advancements in cloud computing, artificial intelligence (AI), and the Internet of Things, voice control is the next step in human-machine connection (IOT). Due to the widespread usage of smartphones in recent years, voice assistants such as Apple's Siri, Google's Assistant, Microsoft's Cortana, and Amazon's Alexa have emerged. Voice assistants deliver services to consumers using technologies such as voice recognition, speech synthesis [1], and Natural Language Processing (NLP). For IOT devices that lack touch capabilities, a speech interface is required (Metz, 2014). Voice assistants are increasingly included in devices that have a microphone and a speaker, in addition to smartphones. Smart speakers are devices that have a microphone and a speaker for communicating with users.

Machine Voice assistants have a number of fascinating features, including the ability to answer queries posed by users.

- Play music
- Set time or alarm
- Phone calls and messages.

Other smart gadgets can be controlled (lights, locks, vacuum cleaners, switches).

2. Literature review

During the survey we found many different approaches taken for this application.

P. J. Rani and others [1] has used an AI, created to make home appliances working on NLP (Natural language processing) The user speaks a command to the smartphone, which translates it and sends the necessary command to the device.

Kim [2] has expressed an open API artificial intelligence representative service, and IFTTT (IF This, Then That), a conditional auto-run system that uses a Raspberry Pi, a voice recognition chip, and open software to construct the system at low cost. It proposes an approach which is likely to be used in a variety of voice recognition-based control systems.

Y Arora and others [3] has put forward an idea of connecting Internet of things (IoT) devices using a radio frequency to create a Wireless home application system. The idea aims to achieve wireless networking of Iot devices using smart AI voice assistant

M. Muthu Mari and others [4] developed an AI assistant that can open and close doors using Bluetooth and Wi-Fi. It is thought that employing advanced technology to open and close doors using voice activation will be futuristic, allowing physically challenged and elderly persons to use it.

Saibaba and others [5] proposed integrating a voice assistant inside a microcontroller for security purposes. The technology uses face recognition to identify and distinguish between the owner and a stranger, and then acts accordingly. If the owner is not at home, the voice assistant can converse with the stranger at the door, and the AI will notify the owner of the visit by email and SMS, along with a snapshot of the visitor.

Hudson and others [6] facilitated a programme that was created to follow the voice commands of police officers for the dissemination of routine tasks, easing work load and simultaneously bringing a wave of new technologies into public departments by using robots, inducting AI-based voice-controlled robots in various fields such as investigation, evidence collection, and so on.

A. Mossel and others [7] expressed a concept to use virtual reality as a part of effective training. Several virtual realities training environments, including CBRN, have been developed for a variety of activities such as conventional training and drill, disaster management and following basic protocols for chemical, biological, radiological and nuclear contamination and avoidance.

Felix, S and others [8] employed artificial intelligence to assist vision impaired persons in measuring and analysing their surroundings and responding to the visually impaired person. With the introduction of high-tech apps, visually handicapped persons are learning to live independently, gradually dismantling socially constraining conceptions.

Torii and others [9] used an AI for autistic children to learn and teach them with the help of voice and visual symbols. The AI learns and teaches the students according to their mindsets and enabling them to unlock their dormant potential.

S. Noel [10] has proposed an idea of smart voice email program based on human computer interaction (HCI) this assistant is for visually impaired users (VIU), enabling them to use email without having the additional skill to type. Common day to day words is used as command language. This technology converts speech to text and text to speech.

3. Methodology

The system interprets a given voice command using natural language processing and processes it. The system checks if the command is a valid command or not and accordingly executes the command after processing it [1]. A successful execution system gives voice-based confirmation if the system is not able to run the command, then it does a simple google query search and returns the results. If the command given is for the home automation section the command given will be handed to the home automation section.

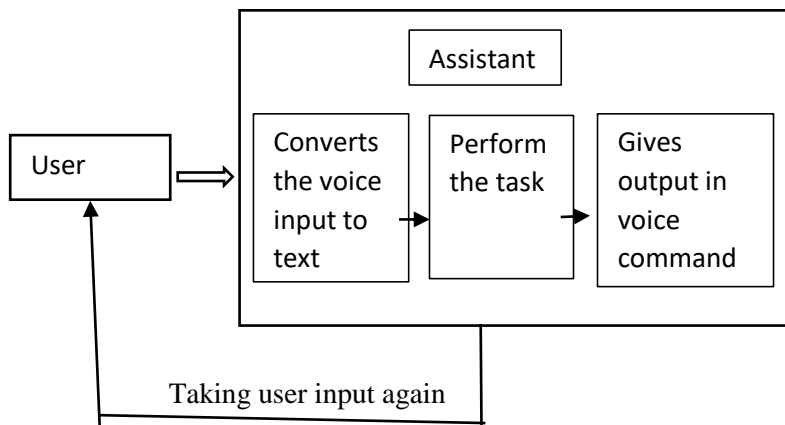


Figure1: flow of the command

The process began with an analysis of the user's audio commands delivered through the microphone. This can include obtaining any information, managing a computer's internal files, and so forth. This is an empirical qualitative research based on reading the material indicated above and putting the instances to the test. Tests are carried out using programming based on books and internet resources, with the specific purpose of identifying best practises and gaining a deeper understanding of Voice Assistant.

Use case diagram

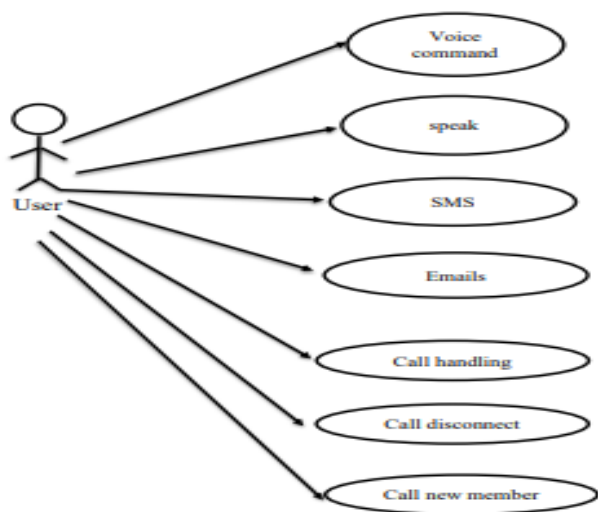


Fig: - Use case diagram

Entity relationship diagram

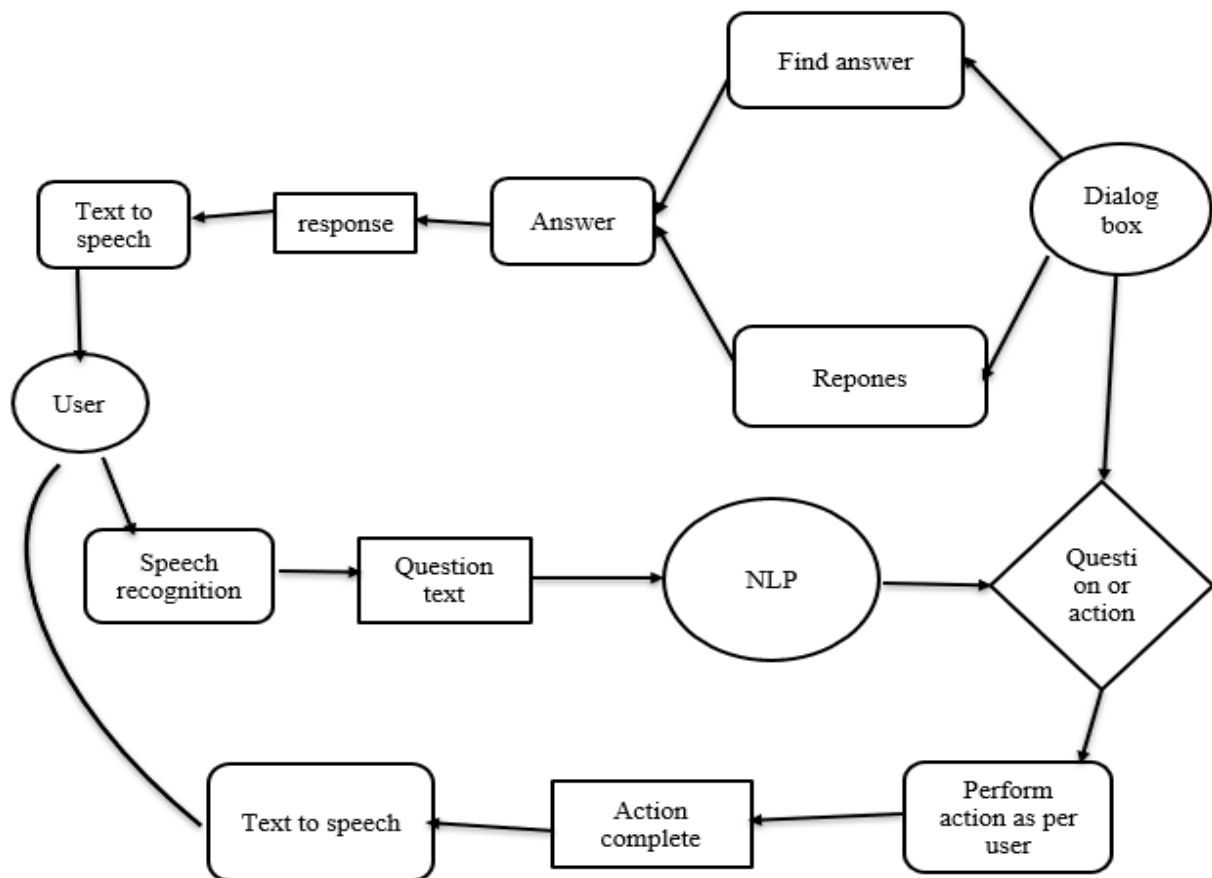


Fig: -

Entity relationship diagram of the voice assistant

4. CONCLUSION

Fully immersive technologies have the potential to modernize the educational system. New learning experiences can be provided by virtual reality, augmented reality, and voice assistants. The research on the integration of AI voice assistants in education is presented in this paper. Since voice assistants and smart speakers are becoming more popular, research on this area is scarce. The findings given in this work should encourage other scholars to look into this area further. As voice assistants and voice assistants become more common in households, they will be the focus of attention in the next few years. As there are various barriers to speaking the language, researchers are looking into how they might be utilized effectively in the learning process. To summarize, study examines the role of these gadgets and their use is still in its early stages, and additional research is needed.

5. References

1. "Voice-controlled home automation system using Natural Language Processing (NLP) and Internet of Things (IoT)," 2017 Third International Conference on Science Technology Engineering & Management (ICONSTEM), pp. 368-373, DOI: 10.1109/ICONSTEM.2017.8261311. P. J. Rani, J. Bhakta Kumar, B. P. Kumaar, U. P. Kumaar, and S Kumar, "Voice-controlled home automation
2. T. -K. Kim, "Short Research on Voice Control System Based on Artificial Intelligence Assistant," 2020 International Conference on Electronics, Information, and Communication (ICEIC), 2020, pp. 1-2, DOI: 10.1109/ICEIC49074.2020.9051160.
3. "Home Automation System with the Use of Internet of Things and Artificial Intelligence," 2019 International Conference on Innovative Sustainable Computational Technologies (CISCT), pp. 1-4, DOI: 10.1109/CISCT46613.2019.9008167. Y. Arora, H. Pant, and Banita,

4. M. Muthumari, N. K. Sah, R. Raj, and J. Saharia, "Arduino based Auto Door unlock control system by Android mobile through Bluetooth and Wi-Fi," 2018 IEEE International Conference on Computational Intelligence and Computing Research (ICCC), 2018, pp. 1-4, DOI: 10.1109/ICCC.2018.8782297.
5. Saibaba, C. H. M. H., Waris, S. F., Raju, S. H., Sarma, V., Jadala, V. C., & Prasad, C. (2021). Intelligent voice assistant by using OpenCV approach. 2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC), 1586–1593.
6. Hudson, C. R., Bethel, C. L., Carruth, D. W., Pleva, M., Ondas, S., & Juhar, J. (2018). Implementation of a speech enabled virtual reality training tool for human-robot interaction. 2018 World Symposium on Digital Intelligence for Systems and Machines (DISA), 309–314.
7. Mossel, A. Peer, J. Goellner, and H. Kaufmann, Requirements Analysis on a Virtual Reality Training System for CBRN Crisis Preparedness
8. S. M. Felix, S. Kumar, and A. Veeramuthu (2018). For vision impaired persons, a sophisticated personal AI assistant. 1245–1250 in the 2018 2nd International Conference on Trends in Electronics and Informatics (ICOEI).
9. Torii, I., Ohtani, K., Shirahama, N., Niwa, T., & Ishii, N. (2012). Voice output communication aid application for personal digital assistant for autistic children. 2012 IEEE/ACIS 11th International Conference on Computer and Information Science, 329–333.
10. S. Noel, S. Noel, S. Noel, S (2020). Smart voice email (vmail) programme based on human-computer interaction (HCI) - assistance for visually impaired users (VIU). 895–900 in 2020 at the Third International Conference on Smart Systems and Inventive Technology (ICCSIT).