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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 stability. They have the potential to be used for educational purposes

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

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).

RELATED WORK

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

P. J. Rani et al., [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.

T. -K. 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 et al.,[3] has put forward an idea of connecting Internet of things (IoT) devices using a radio frequency identification (RFID) 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 et al.,[4] facilitated an AI assistant to open and close doors through Bluetooth and Wi-Fi, it is believed that by using advanced technology, to open and close doors by voice activation will be futuristic and can allow physically challenged and elderly people to operate it.

Saibaba et al., [5] has proposed to implement a voice assistant in a microcontroller to use for security. Using face recognition, the system is able to identify and differentiate between the owner and a stranger, and behave accordingly. The voice assistant can communicate with the stranger at the door if the owner is not at home, and the AI will alert the owner of the visit by email and SMS, along with a photograph of the visitor.

Hudson et al.,[6] facilitated a program that was created to follow the voice commands of police personnel for dissemination of routine tasks enabling ease of work load and simultaneously bringing wave of new technologies in public departments by using robots thus inducting AI based voice-controlled robots in various fields such as investigation, evidence collection.

A. Mossel et al.,[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.

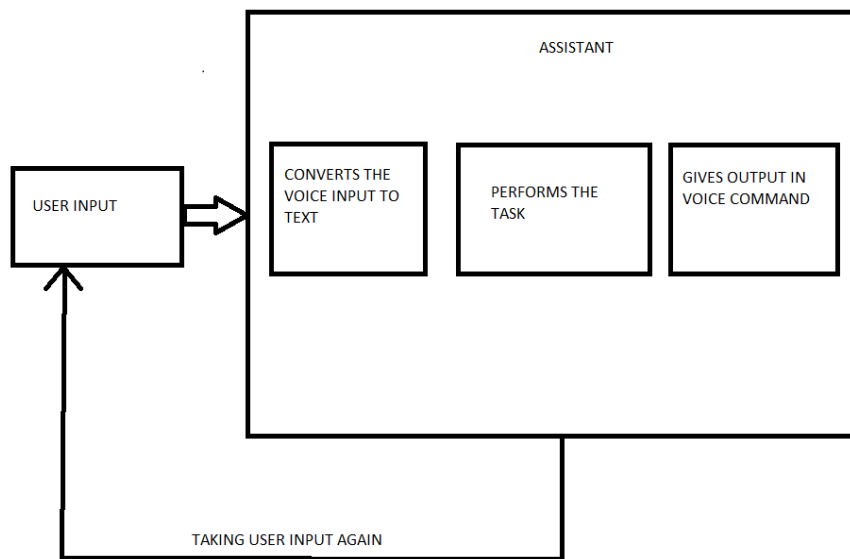
Felix, S et al., [8] used an AI to help visually impaired people to measure and analyze the surrounding environment and respond to the person who is visually impaired. With the arrival of high technological applications, visually impaired people are learning to live independently, thus slowly wearing down the constructs of social restrictiveness.

Torii et al., [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 enables them to unlock their dormant potential.

S. Noel [10] has proposed an idea for a 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 are used as command language. This technology converts speech to text and text to speech.

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 home automation section the command given will be handed to the home automation section



Usages

This voice assistant can be used by

- Adults
- Children
- Elderly people
- People with disabilities

Adults: The findings show that people refer to technology in a variety of ways, with over half adopting the personified name "Alexa," and a modest level of sociability. Users said they use the device for leisure, such as listening to music, as well as for other duties such as getting information, managing schedules, and shopping.

Children: Studies show that children use these voice assistants to search for the games and songs which they want and search and learn new skills on the internet. Many children love to just talk to voice assistant

Elderly people: Active users with basic computer abilities were described as participants. The study's findings imply that the participants were amazed by the range of capabilities offered by voice assistants. Participants also enjoyed the idea of being able to complete certain jobs solely by voice, not just because they may have difficulty moving, as one participant said, but also because it does not interfere with their workflow. It should be mentioned that voice assistants were mostly used as search engines, but they were also used as translators and even teachers. The authors also emphasize the necessity for more research on how elderly individuals utilize voice assistants.

People with disabilities: A little research looked into how voice interfaces can help people with cognitive disabilities or vision problems in their daily lives, as well as how easy it is for them to use voice assistants.

Voice assistant and Education

Voice assistants assist in overcoming some of the constraints that the other forms of technology in education impose. Reading material from a device, for example, causes the teacher to lose eye contact with the children. Making a virtual assistant read things out loud allows teachers to retain a strong relationship with their students.

Language learning

Smartphones and mobile learning have clearly enabled more people to study and excel in learning, regardless of where they are. Inside and outside the classroom, informal learning is a natural companion to everyday life. Language acquisition is a typical lifelong endeavor for many people who want to learn a new language or improve their existing knowledge. Outside of the classroom, online programmes such as FluentU and Duolingo

are popular for practicing this ability. Language learning is another significant topic covered in all institutions, and since the majority of students are enrolled in foreign language classes, voice assistants might be helpful. In any event, finding opportunities to speak the language is one of the most difficult problems for many language learners.

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.

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