PROJECT :- Real-Time Communication System Powered by AI for Specially Abled

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ABSTRACT

1.To develop a system that converts the sign language into a human hearing voice.

The project aims to develop a system that converts the sign language into a human hearing voice in the desired language to convey a message to normal people, as well as convert speech into understandable sign language for the deaf and dumb. We are making use of a convolution neural network to create a model that is trained on different hand gestures. An app is built which uses this model. This app enables deaf and dumb people to convey their information using signs which get converted to human-understandable language and speech is given as output.

In our society, we have people with disabilities. The technology is developing day by day but no significant developments are undertaken for the betterment of these people. Communications between deaf-mute and a normal person has always been a challenging task. It is very difficult for mute people to convey their message to normal people. Since normal people are not trained on hand sign language.

2.AI to make life easier for the disabled !!!

Many of us think that artificial intelligence represents an abstract and futuristic notion we only see in sci-fi films with humanoid robots and holograms. However it's more and more grounded in our reality reaching various fields and categories of people including people with disabilities. Artificial intelligence truly revolutionizes accessibility and inclusion! Thanks to AI technology solutions, people with disabilities can drastically improve their everyday lives.
We had previously seen that smartphones are a powerful tool that help users with a visual impairment. Indeed, many apps enable them to remain autonomous. For example, thanks to Seeing AI, visually impaired people can easily read their mail by placing documents under the smartphone camera. AI technology can apply to any type of disability profile. For instance, people with reduced mobility can control

everything at home just by using their voice with a virtual personal assistant such as Amazon Alexa.

3.How AI Can Improve the Lives of People with Disabilities

Artificial Intelligence has been opening up new and simpler ways to manage our daily activities. With the big potential to automate tasks that typically require human intelligence, such as speech and voice recognition, visual perception, predictive text functionality, decision-making and performance of a variety of other tasks, AI can help individuals with disabilities by making a major difference in their ability to get around and take part in the activities of daily living.

Artificial Intelligence can be a game-changer for disabled people by making it easier to create interactive tools that support physical accessibility and independence. Let's go through some useful applications of Artificial Intelligence in this field and see how it can be used to improve the lives of those with disabilities in a number of ways.

4. Communication and human connection

AI-voice-assisted technologies, like Echo, Google Home, Alexa, have created new means of accessibility for disabled people. As Artificial Intelligence takes an important role in communication and interaction, the use of this technology enables individuals with disabilities to access information much easier, all just by speaking to their devices.

Advances in speech-to-text and text-to-speech technologies come to aid those living with speech impediments. Voice systems like Voiceitt can learn speakers' pronunciation over time and translate the user's words into clear and normalized speech in the form of audio or text messages. The app may also be used to help people with speech impairments communicate face-to-face with each other. Similarly, Google's Parrotron is another AI tool that makes it easier for speech-impaired users to be understood by turning impaired speech patterns into fluent speech.

5.Communicating with others and being connected

Depending on the type of disability and profile, communicating with others can be a challenge. The same holds true for staying connected to others in a world that's more and more digitized with the growing importance of social media and our dependence to the Internet. But technology and AI

leave no one behind and can be at the service of people with disabilities. A lot of apps use artificial intelligence to favor accessibility.

6.Real time Remote Control System in a Multiple Access Scenario

The ubiquitous presence of powerful low-power wireless systems on chip (SoC) able to operate in the Industrial, Scientific and Medical (ISM) band has brought a new enhanced operational choice for real-time Radio Control (RC) applications such as aircrafts and cars in the hobby grade category. Frequency Hopping Spread Spectrum (FHSS) has become the dominant transmission technique for the previously mentioned hardware platform. Even though, FHSS provides for resilience to noise and interference, partial-band type of interference could be specially harmful with regards to the overall system performance. This is critical in real-time RC applications as it could increase system latency. The present paper characterizes the performance of a single real-time RC application, which operates in a realistic multi-user ISM environment by means of two main metrics: System Lag Occurrence Probability (SLOP) and Probability of Losing a Packet (PoLP). Both Synchronous FHSS Multiple Access (SFHSS-MA) and Asynchronous FHSS Multiple Access (AFHSSMA) environments have been modeled. Simulation results show the level of impact on system performance of key engineering parameters such as clock drift, number of co-located users, and variable data packet duty cycle.

7. Portable Communication Aid for Specially Challenged :

Conversion of Hand Gestures into Voice and ViceVersa

Communications between a normal person and with the person having hearing loss and dumb have constantly been a tough assignment. The work is to develop a portable device for the disabled people those who are not able to communicate with the normal persons properly. The technology development presents a solution to build up a sign language conversion system to support the individual with hearing loss and mute people. The core idea is to build up a real time embedded product for the disabled persons without handheld gloves to assist their announcement in efficient way. Similarly the speech communication by normal persons will be converted into gestures for the disabled persons for their better understanding. This device will act as a two way communication device between normal and disabled persons.

8. Online Allocation of Communication and Computation Resources for Real-Time Multimedia Services

In a network, the location of the node on which a service is computed is inextricably linked to the locations of the paths through which the service communicates. Hence,

service location can have a profound effect on quality of service, especially for communication-centric applications such as real-time multimedia. In this paper, we propose an online algorithm that uses pricing to consider server load, route congestion, and propagation delay jointly when locating servers and routes for real-time multimedia services in a network with fixed computing and communication capacities. The algorithm is online in the sense that it is able to sequentially allocate resources for services with long and unknown duration as demands arrive, without the benefit of looking ahead to later demands. By formulating the problem as one of lowest cost subgraph packing, we prove that our algorithm is nevertheless *C* -competitive with the optimal algorithm that looks ahead, meaning that our performance is within a constant factor *C* of optimal, as measured by the total number of service demands satisfied, or total user utility. Using mixing services as an example, we show through experimental results that our algorithm can adapt to cross traffic and automatically route around congestion and failure of nodes and edges, can reduce latency by 40% or more, and can pack 20% more sessions or alternatively can double the number of sessions before significant call rejection, compared with conventional approaches.

9. An adaptive noncommunication protection for distribution systems

This paper presents an integrated accelerated protection scheme for distribution systems based on the conventional directional overcurrent (OC) protection. An integrated relay in a distribution substation, connected to both the incoming and outgoing lines associated with the station busbar, is responsible for the protection both line sections. The increase in the operating speed is achieved by identifying the remote circuit breaker through the changes of the local currents and voltages. As a result, a significant increase in the operating speed can be achieved for the relay on the side with the longer definite grading time setting. Extensive tests have been conducted using a real-time digital simulator (RTDS) modelling a typical multi-section distribution system. The results prove that the new scheme is able to significantly increase the speed of responses of conventional time grading protection. Furthermore, the scheme not only has good adaptive capacity to source condition change, but also can clear the fault from both ends of the line section especially in single source systems, thereby improving distribution automation.

10. Reliable Multicast Communication System over IPv4/IPv6

Today the internet is predominantly based on IPv4. As a result, most of the end systems and network devices are able to exchange packets all together in a global network. But IPv4 was not developed to accommodate such a magnitude and broad range of use, so it has various problems including a limited address space and security issues. So IPv6 (Internet Protocol Version 6) has been developed based on IPv4 as a protocol for the next-generation Internet, and it has an expanded address space, security features, automatic network configuration, and guaranteed communication quality. Nowadays, computer based real time collaborative

systems like shared whiteboards, collaborative editor etc. are only beginning to emerge recently. A key element to facilitate IP multicast is to reduce the amount of infrastructure and network support specially introduced for multicast. Multicast communication is a transmission mode that is now supported by a variety of local and wide area networks. Multicasting enables multiparty communication across a wide area to sparsely distributed groups by minimizing the network load. Multicasting itself is one of the key technologies in the next generation of the Internet. The technology is expected to serve to establish a new social infrastructure. We propose the design of the multicast communication over IPv4/IPv6 network environment. We present the mechanisms for the scalability of reliable group communication using single source multicast. These mechanisms use intermediate storage servers attached with routers enabling large-scale distribution of content from a well known sources to a general receiver.