

Literature survey on “Real time Communication by AI for disabled people “

1.D-Talk: Sign Language Recognition System for People with Disability using Machine Learning and Image Processing (Bayan Mohammed Saleh, Reem Ibrahim, and Muhammad Usman)

In 2020 proposed an idea for a D-talk sign language recognition system for people with disabilities using machine learning and image processing. This paper shows how artificial intelligence is being used to help people who are unable to do what most people do in their everyday lives. Aligned with communication, D-talk is a system that allows people who are unable to talk and hear to be fully understood, allowing them to learn their language more easily and for the people that would interact and communicate with them. This system provides detailed hand gestures that show the meaning at the bottom so that everyone can understand them. This research teaches readers about the system and what it can do for people who are struggling with what they are not capable of, as well as the technical terms used to describe how the system works.

2.Sign Language Recognition System for People with Disability using Machine Learning and Image Processing (Bayan Mohammed Saleh, Ibrahim Al-Beshr, Muhammad Usman Tariq)

Communication plays a significant role in making the world a better place. Communication creates bonding and relations among the people, whether persona, social, or political views. Most people communicate efficiently without any issues, but many cannot due to disability. They cannot hear or speak, which makes Earth a problematic place to live for them. Even simple basic tasks become difficult for them. Disability is an emotive human condition. It limits the individual to a certain level of performance. Being deaf and dumb pushes the subject to oblivion, highly introverted. In a world of inequality, this society needs empowerment. Harnessing technology to improve their welfare is necessary. In a tech era, no one should be limited due to his or her inability. The application of technology should create a platform or a world of equality despite the natural state of humans. On the other hand, technology is the most innovative thing on Earth for every time the clock ticks, researchers, software engineers, programmers, and information technology specialists are always coming up with bright ideas to provide convenience to everyone. This paper shows how artificial intelligence is being used to help people who are unable to do what most people do in their everyday lives. Aligned with

communication, D-talk is a system that allows people who are unable to talk and hear be fully understood and for them to learn their language easier and for the people that would interact and communicate with them. This system provides detailed hand gestures that show the interpretation at the bottom so that everyone can understand them. This research allows the readers to learn the system and what it can do to people who are struggling with what they are not capable of and will provide the technical terms on how the system works.

3.Real-time Communication System for the Deaf And Dumb (Kedar Potdar , Gauri Nagavkar)

This project aims to aid the deaf-mute by creation of a new system that helps convert sign language to Text and speech for easier communication with audience. The system consists of a gesture recognizer hand-glove which Converts gestures into electrical signals using flex sensors. These electrical signals are then processed using an Arduino Microcontroller and a Python-based backend for text-to-speech conversion. The glove includes two modes of operation phrase fetch mode and letter fetch mode. The phrase fetch mode speaks out words at once, while the letter fetch mode Speaks out individual letters. This project forms a base infrastructure which can later be augmented with addition of different Sign Languages and integrating with other hearing impaired aid systems.

4.Smart Communication for Differently Abled People (Bhavani, B. Poornima, M. Surya Bharathi, M. Saraswathi)

In our day to day life most of the task we carry out involves speaking and hearing. The deaf and dumb people have difficulty in communicating with others who cannot understand sign language and misinterpreters. In this paper, we designed a simple Embedded System based device for solving this problem. We have used flex sensor for getting the data from the deaf and dumb using sign language. When deaf wants to convey any messages then the user will give his voice as input to the android based voice app. Then the app will transfer this speech in to text and it will displayed in LCD. For Dumb People if they want to convey any messages to user Two Flex sensors are used to play voice. For Blind People, if they want to read any books or text the camera will act as eye to capture the text region and using tesseract it will convert in to voice.

5.AI Improving the Lives of Physically Disabled (Hemshree Madaan, Shubham Gupta)

Physical disability is one of the significant concerns that hamper individuals to access the web easily. Most of the physically disabled people cannot use technology because of the limitation of accessibility tools and techniques. It is required that the websites should be made compliant with the requirements of every citizen in a country; that is why they should cater to the needs of the differently-abled citizens as well. Features must be introduced in the websites so that they are easy to use, readily accessible, understandable, and convenient to everyone including best practices/standards and global innovation techniques. At times, accessibility is confused with providing solutions to disabled people, but the fact is accessibility is not only for differently-abled people, but it is also there for everyone. The matter is every person needs accessibility and uses it when in need.

6.Application of Machine Learning Techniques for Improving Learning Disabilities (Poornappriya, R Gopinath)

Learning disorders such as dysgraphia, dyslexia, dyspraxia, and others obstruct academic progress while also having long-term implications that extend beyond academic time. It is well acknowledged that this type of disability affects between 5% and 10% of the overall population. Children must complete a battery of tests in order to be assessed for such disabilities in early life. These assessments are scored by human professionals, who determine if the youngsters require special education strategies depending on their results. The evaluation can be time-consuming, costly, and emotionally draining. Dyslexia is a learning disability marked by a lack of reading and/or writing skills, as well as difficulties with fast word identifying and spelling. Dyslexics have a challenging time reading and understanding words and letters. Different methodologies are used in research to distinguish dyslexics from non-dyslexics, such as machine learning, image processing, studying cerebrum behaviour through brain science, and pondering the variations in life systems of mind. E-learning technologies have been increasingly important in higher education in recent years, particularly in improving learning experiences for those with learning disabilities. However, many professionals involved in the creation and deployment of e-learning tools fail to consider the needs of dyslexic pupils. In this research, a comprehensive literature review is conducted on machine learning algorithms for dyslexia prediction and e-learning for learning and cognitive disorders.

7.Glove based gesture recognition sign language translator using capacitive touch sensor (Abhishek KS, Qubeley S)

These sign language translator is a bridge between those who comprehend sign languages and those who do not which is the majority of humanity. Glove based on charge-transfer touch sensors for the translation of the American Sign Language. These device is portable and can be implemented with low-cost hardware. The prototype recognize gestures for the numbers 0 to 9 and the 26 English alphabets, A to Z. The glove experimentally achieved, based on 1080 trials, an overall detection accuracies of over 92 %, which is comparable with current high-end counterparts. The proposed device I expected to bridge the communication gap between the hearing and speech impaired and members of the general public.

8.Deaf talk using 3D animated sign language (software : Microsoft kinect) (M.Ahmed)

It describes a neoteric approach to bridge the communication gap between deaf people and normal human beings. In any community there exists such group of disable people who face severe difficulties in communication due to their speech and hearing impediments. Such people use various gestures and symbols to talk and receive their messages and this mode of communication is called sign language. Yet the communication problem does not end here, as natural language speakers do not understand sign language resulting in a communication gap. For this purpose, a software based solution has been developed in this project by exploiting the latest technologies from Microsoft i.e. Kinect for windows V2. The proposed system is dubbed as Deaf Talk, and it acts as a sign language interpreter and translator to provide a dual mode of communication between sign language speakers and natural language speakers. The dual mode of communication has following independent modules (1) Sign/Gesture to speech conversion (2) Speech to sign language conversion. In sign to speech conversion module, the person with speech inhibition has to place himself within Kinect's field of view (FOV) and then performs the sign language gestures. The system receives the performed gestures through Kinect sensor and then comprehends those gestures by comparing them with the trained gestures already stored in the database. Once the gesture is determined, it is mapped to the keyword corresponding to that gesture. The keywords are then sent to text to speech conversion module, which speaks or plays the sentence for natural language speaker. In contrast to sign to speech conversion, the speech to sign language conversion module translates the spoken language to sign language. In this case, the normal person places himself in the Kinect sensor's FOV and speaks in his native language (English for this case). The system then converts it into text using speech to text API. The keywords are then mapped to

their corresponding pre-stored animated gestures and then animations are played on the screen for the spoken sentence. In this way the disable person can visualize the spoken sentence, translated into a 3D animated sign language. The accuracy of Deaf Talk is 87 percent for speech to sign language conversion and 84 percent for sign language to speech conversion.