Real-Time Communication System Powered by AI for Specially Abled

LITERATURE SURVEY

1. **TITLE : Sign language recognition systemfor people with disability using machine learning and image processing**

   YEAR : 2020

   AUTHORS : Bayan Mohammed Saleh, Reem Ibrahim Al-Beshr

   DESCRIPTION :

   Communication plays a significant role in making the world a better place. Communication creates bonding and relations among the people, whether person a, 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 also 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.

2. TITLE : Artificial Intelligence enabled virtual sixth sense application for the disabled

YEAR : 2019

AUTHOR : Aditya Sharma , Aditya Vats , Shiv Shankar Dash and Surinder Kaur

DESCRIPTION :

The sixth sense is a multi-platform app for aiding the people in need that is people who are handicapped in the form of lack of speech (dumb), lack of hearing (deaf), lack of sight (blind), lack of judicial power to differentiate between objects (visual agnosia) and people suffering from autism (characterized by great difficulty in communicating and forming relationships with other people and in using language and abstract concepts). Our current implementation of the product is on two platforms, namely, mobile and a web app. The mobile app even works for object detection cases in offline mode. What we want to achieve using this is to make a better world for the people suffering from disabilities as well as an educational end for people with cognitive disabilities using our app. The current implementation deals with object recognition and text to speech and a speech to text converter. The speech to text converter and text to speech converter utilized the Web Speech API (Application Program Interface) for the website and text to speech and speech to text library for the mobile platform. The object recognition wouldn't fetch enough use out of a website. Hence, it has been implemented on the mobile app utilizing the Firebase ML toolkit and different pre-trained models, which are both available offline as well as online.

3.TITLE : Design of a Communication System using Sign Language aid for Differently Abled Peoples

YEAR : **2017**

AUTHOR : Shrikant Temburwar, Payal Jaiswal, Shital Mande, Souparnika Patil

DESCRIPTION :

One of the most precious gifts of nature to the human race is the ability to express itself by responding to the events that occur in its environment. Every normal person sees, hears, and then reacts to the situations by expressing himself. But there are some less lucky ones who are deprived of this precious gift. Such people, especially deaf and mute, rely on some sort of gesture language to communicate their feelings to others. The deaf, dumb and the blind follow similar problems when it comes to the use of computers. In the era of advanced technologies, where computers, laptops and other processor-based devices are an integral part of everyday life, efforts must be made to make the disabilities in life more independent. Our goal is to design a human computer interface system that can accurately identify the language of the deaf and dumb. With the use of image processing and artificial intelligence, many techniques and algorithms have been developed in this area. Each character speech recognition system is trained to recognize the characters and convert them into the required pattern. The proposed system aims to give speech speechless, a real-time character language is captured as a series of images, and it is processed and then converted into speech and text

4.TITLE : Real-time Communication System for the Deaf and Dumb

YEAR : 2017

AUTHOR : Kedar Potdar , Gauri Nagavkar

DESCRIPTION :

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.

5. TITLE : Personal Voice Assistant of Security to Abled and Elderly People Using Artificial Intelligence

YEAR : 2018

AUTHOR : Pitta Sankara Rao

DESCRIPTION :

In the past few years, Artificial Intelligence (AI) has grown so much in the field of science and technology. Voice assistant incorporate AI by using cloud computing and Natural Language Processing (NLP). In AI, NLP is used to communicate with the user in natural language. There are lots of devices which use AI nowadays such as AI Voice assistant. There are millions of households who have been using voice assistants for their personal use. Most common devices which uses voice assistant are smart speakers. The main idea of this paper is to make a personal assistant to provide security to especially abled and elderly people. In today's world of growing technologies like, Augmented Reality (AR), Virtual Reality (VR), IOT, cloud computing, block chain, Quantum computing and voice interactions are reshaping the way people engage with the world and transforming digital experiences. In coming years, voice control will be the medium of human-computer interaction. In 2020, near about 1.38 billion smartphones were sold worldwide. In the year 2018, 1.56 billion smartphones were sold, which is the maximum number of smartphones sold all over the world ever. The heavy use of smartphones led to the appearance of many voice assistants like Apple's Siri, Google's Assistant, Amazon's Alexa, and Microsoft's Cortana. Other than smartphones, personal voice assistants are now accommodated in speaker to communicate with the user, which is also called smart speakers. Since data has to be sent back and forth to the centralized data centres, voice assistants rely totally on cloud-based architecture. So, most of the artificial intelligence processing happens in the cloud and not in the device itself.. Then the text goes to backend and after processing there, backend replies with text response. Lastly, the text response goes through the cloud and gets transformed into voice, which will be streamed back to the user in voice. So, for example the user is blind and can't see that who is at the door , then by using image processing the image of the person will be matched with the stored database that whether the person at the door is a friend or a stranger. If the face of the person will get matched with the stored database than the person is a friend or otherwise a stranger.

6.TITLE : Artificial Intelligence Technologies for Sign Language

YEAR : 2021

AUTHOR:IliasPapastratis, ChristosChatzikonstantinou, Petros Daras

DESCRIPTION :

AI technologies can play an important role in breaking down the communication barriers of deaf or hearing-impaired people with other communities, contributing significantly to their social inclusion. Recent advances in both sensing technologies and AI algorithms have paved the way for the development of various applications aiming at fulfilling the needs of deaf and hearing-impaired communities. To this end, this survey aims to provide a comprehensive review of state-of-the-art methods in sign language capturing, recognition, translation and representation, pinpointing their advantages and limitations. In addition, the survey presents a number of applications, while it discusses the main challenges in the field of sign language technologies. Future research direction are also proposed in order to assist prospective researchers towards further advancing the field.