

Paper 1: Innovative study of an AI voice based smart Device to assist deaf people in understanding and responding to their body language

Publication year: 2021

Author: Dhaya Sindhu Battina, Lakshmisri S

Journal Name: International Journal of Creative Research Thoughts(IJCRT)

In this paper, proposal is based on the rationale that a deaf person can be able to hear what they see through an AI voice-based smart device. This is a device that will read body language which is hand gestures. Hand gestures are often used by deaf individuals to interact with one another in everyday situations. The fundamental concept behind this proposed device is the capture of these hand movements using sensors installed inside the device and the processing of the signal into a voice. To monitor hand gestures, this device makes use of flex sensors and Inertial Measurement Units (IMUs) which are connected to a microcontroller on the motherboard. The microcontroller contains the CPU, memory, and AI programmable input/output peripherals. To detect the features of the hand, the system on this gadget makes use of image analysis, human-computer interaction, and neural network methods. This method will convert a video of a daily, regularly used proper sentence gesture into a text, which will subsequently be converted into audio.

Paper 2: SUPPORT FOR COMMUNICATION WITH DEAF AND DUMB PATIENTS VIA FEW-SHOT MACHINE LEARNING

Publication year: 2021

Author: Grigorii Shovkoplias, Mark Tkachenko, Arip Asadulaev, Olga Alekseeva, Natalia Dobrenko, Daniil Kazantsev, Alexandra Vatian, Anatoly Shalyto and Natalia Gusarova

Journal Name: International Conferences ICT, Society, and Human Beings 2021.

Improving healthcare quality and patient safety for patients with disabilities is one of the most important goals of e-Health. A large percentage of these patients are persons with disabling hearing loss, i.e. partially or completely deaf and dumb. In this paper, they discuss the opportunity of fast Sign Language processing having only a small number of examples. They investigated the possibility of classifying datasets with an extremely small number of samples of electromyograms of deaf and dumb gestures using few-shots learning methods. Several such methods have been considered - Matching Networks, Model-Agnostic Meta-Learning, and Prototypical Networks. The developed methodology makes it possible to train electromyogram classifiers using an extremely small amount of data for other deaf and dumb sign languages. To do this, it is enough to collect a small dataset for re- or additional training of these models for the classification of another language, which is easy to accomplish in practice by means of a small session of recording the gestures of several deaf-mute people - speakers of a particular sign language. They selected three main few-shot learning approaches and compared them on small sign language dataset. Based on results, one can choose the best models and their modifications to adapt to the practice task.

Paper 3: Hand Talk: Intelligent Sign Language Recognition for Deaf and Dumb

Publication year: 2015

Author: S.Philomina , M.Jasmin

Journal Name: International Journal of Innovative Research in Science, Engineering and Technology.

The Proposed system introduces an efficient and fast algorithm for identification of the number of fingers opened in a gesture representing an alphabet of the Binary Sign Language. The idea consisted of designing and building up an intelligent system using group of Flex sensor, machine learning and artificial intelligence concepts to take visual inputs of sign language's hand gestures and generate easily recognizable form of outputs. The objective of this project is to develop an intelligent system which can act as a translator between the sign language and the spoken language dynamically and can make the communication between people with hearing impairment and normal people both effective and efficient. After recognizing the gesture the output are expressed in terms of voice and text for display.

Paper 4: DUMB WITHOUT DEAF PEOPLE SPEECH RECOGNITION BY USING ARTIFICIAL INTELLIGENCE

Publication year: 2019

Author: 1 Manyam Harish Reddy, 2 Md Km Chisti, 3 Vamsi Reddy Atchi

Journal Name: International Journal of Electrical, Electronics and Data Communication

Recently, lots of research has been directed towards natural language processing. However, the vocal cord frequency, which serves as primary means of communication for dumb people, has not yet been extensively explored, because it is not a language that can be easily understood. Information Communication Technology (ICT) can support people with physical disabilities by enabling them to access the information along with others. In this paper, The primary aim lies in capturing the vocal cord frequencies of the dumb without deaf people and converting them into sound by using Short Time Zero Crossing (STZC) method. In this paper a novel humanitarian technology developed to aid dumb without deaf people using Artificial Intelligence at low cost and by using deep learning they are trying to train the brain. They use a time varying Fourier transform to study the spectral properties of vocal cord frequency signals. Therefore, they can try to identify between vocal track system and input signals which are related with different words in this paper, short time Fourier transform (STFT) is used to analysis the vocal cord frequency signals.

Paper 5: Real time Indian sign language system using Artificial Intelligence

Publication year: 2022

Author: Jatin Jagani, Yogita Parikh, Vishal Savaliya, Gaudani Mohit

Journal Name: Journal of Emerging Technologies and Innovative Research

This paper presents approach to convert "Sign Language into speech using Artificial Intelligence in real time" for deaf and dumb people. Deaf and Dumb People feels difficulty to communicate with the ordinary people. The sign language of deaf and dumb is quite difficult to learn and it is not possible for everybody to learn that language. This approach helps to provide communication between people with speech impairment and normal people, thereby reducing the communication gap between them. This system capable of recognizing 26 gestures of letter from the Indian Sign Language by using Artificial Intelligence. The proposed system having Real time video acquisition, frame extraction and Pre-processing, Hand gesture segmentation, Sign recognition using AI, Text and audio output of letter. By using Webcam, capture the real time video of hand gestures for Indian sign language and extract the video frames from it. Brightness and orientation of frame is derived and if its value is not proper, then frame is rejected and it is acquired again. Sign gesture is segmented by using K-means clustering algorithm and morphological image processing. Sometimes there is difficult to segment the hand gestures due to different background conditions. A convolutional Neural Network recognize the letter of ISL with the 97% recognition rate. It is trained by using different segmented hand gesture of letters in different background conditions. Recognized gesture is used to convert sign into text and audio output for users.

