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

Authors:Dhaya Sindhu Battina,Lakshmisri S
Published on:Oct 2021

Human beings can communicate with one another via natural language channels including words and writing, or through body language.Even though mobile technology is rapidly evolving and becoming incredible, there has been little technological advancement and development for artificial intelligence voice-based smart devices that can assist deaf people in understanding and responding to their body language. AI voice-based smart Device that can assist disabled deaf people to understand and respond to their body language.The development of smart applications, hearing aids, and cochlear implants, as well as many other add-ons that transform cell devices into otoscopes, are already underway, enabling people to achieve special properties.

Real Time Identification of American Sign Language for Deaf and Dumb Community :

Authors: Snehal Pawar , Pragati Salunke , Arati Mhasavade , Aishwaraya Bhutkar , K. R. Pathak
Published on:2019

The only way for deaf and dumb for communication is based on sign language which involves hand gestures. In this system, we are working on the American Sign Language (ASL) dataset (A-Z), (0-9) and word alphabet identification by escorting our word identification dataset of Indian Sign Language (ISL). Sign data samples to be making our system more faultless, error free, and unambiguous with help of Convolutional Neural Network (CNN).The hand gesture recognition systems based on American Sign Language dataset with our Indian sign contribution along with some common words using deep learning approach. System will be a

two way communication system by performing sign to text and voice conversion and voice to sign conversion.

A Communication Aid System for Deaf and Mute using Vibrotactile and Visual Feedback :

Authors:Masrur Sobhan , Mehrab Zaman Chowdhury , Imamul Ahsan, Hasan Mahmud and Md. Kamrul Hasan
Published on:Sep 2019

Assistive technology is quite necessary to establish a two-way communication among deaf, mute and normal people where none of them needs to acquire knowledge of sign language.An Android app has been developed which is focused on a multimodal approach that can be able to convert speech to visual contexts and vibrations, and similarly, the contexts and vibrations can be converted to speech.The information (words and images) stored in the database is static.A total adaptive model is planned to be developed for more flexibility where new words which aren't available in the database, will be stored automatically using NLP (Natural Language Processing) and AI (Artificial Intelligence) by segmenting command and context from the input speech.The system is emphasized on both visual and vibrotactile feedback while communicating.

A Review Paper on Sign Language Recognition for The Deaf and Dumb :

Authors:R Rumana, Reddygari Sandhya Rani, Mrs. R. Prema
Published on:Oct 2021

Hand gesture is one of the methods used in sign language for non-verbal communication. It is most commonly used by deaf & dumb people who have hearing or speech problems to communicate among themselves or with normal people.The static hand gesture recognition system using digital image processing. For hand gesture feature vector SIFT algorithm is used.. Sign language recognition systems typically elaborate three steps: preprocessing, feature extraction and classification. Classification methods used for recognition are Neural Network (NN), Support Vector Machine (SVM), Hidden Markov Models (HMM), Scale Invariant Feature Transform (SIFT), etc.

D-Talk:Sign Language Recognition System for People with Disability using Machine Learning and Image Processing :

Authors:Bayan Mohammed Saleh, Reem Ibrahim Al-Beshr, Muhammad Usman Tariq
Published on:Sep 2020

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. Artificial intelligence is being used to help people who are unable to do what most people do in their everyday lives. Gesture interpretation works best in case users who understand sign language may interact with people who are unfamiliar with sign language. Speech interpretation is helpful for sign language non-speakers who want the accompanying hand sign to be understood.Aligned with communication, D-talk is a system that allows people who are unable to talk and hear to be fully understood and for them to learn their language easier and also for the people that would interact and communicate with them.

Translating Indian Sign Language to Text using Deep Learning :

Authors:Dr. P. SivakumarAmrithaa I S, Sandhiya A., Janani T., Karthikeyani S
Published on:May 2022

Indian Sign Language (ISL) could be a complete language with its own descriptive linguistics, syntax, vocabulary and a number of other distinctive linguistic attributes.The communication among the deaf and dumb folks is carried by text and visual expressions. Gestural communication is usually within the scope of confidential and secure communication.AI powered translator,that allows the DHH community to continue conversing in ISL and enables the hearing community to understand them easily. With the rise of video calling applications and work from-home (78% of our survey respondents work from home), we believe that integrating a sign language interpreter into video calling apps like Microsoft Teams should ease the problem of workplace communication, and level the playing field for the DHH community at work.

Hand Gesture Recognition Systems: A Survey

Authors:Arpita Ray Sarkar,G. Sanyal,S. Majumder
Published on:May 2013

Gesture was the first mode of communication for the primitive caveman. Later on human civilization developed verbal communication very well. Non – verbal communication is being used not only for the physically challenged people, but also for different applications in diversified areas, such as aviation, surveying, music direction etc.The major steps associated with the hand gesture recognition system are; data acquisition, gesture modeling, feature extraction and hand gesture recognition. Hand gesture recognition is finding its application for nonverbal communication between human and computer, general fit person and physically challenged people, 3D gaming, virtual reality etc.

Sign Language Recognition using Convolutional Neural Networks :

Authors:Lionel Pigou, Sander Dieleman, Pieter-Jan Kindermans, Benjamin Schrauwen
Published on:Aug 2020

There is an undeniable communication problem between the Deaf community and the hearing majority. Innovations in automatic sign language recognition try to tear down this communication barrier. Our contribution considers a recognition system using the Microsoft Kinect, convolutional neural networks (CNNs) and GPU acceleration. Instead of constructing complex handcrafted features, CNNs are able to automate the process of feature construction.The convolutional neural networks can be used to accurately recognize different signs of a sign language, with users and surroundings not included in the training set. This generalization capacity of CNNs in spatiotemporal data can contribute to the broader research field on automatic sign language recognition,

Augmentation communication for deaf and dumb :

Authors:Flavita Janice Pinto, Abdul Shaheel, Bhagyashree V.K , Priyatha Jogi, Sharanya K
Published on:2022

People get to know one another through sharing their ideas, thoughts, and experiences with others around them. There are several ways to accomplish this, the best of which is the gift of "Speech." The usage of "Sign Language" is the only mode of communication available to the deaf and dumb. Mute people can make hand gestures with their fingers, which will be transformed into speech so that regular people can understand them. The deaf and dumb communicate through sign language, which is difficult to decipher for those who are not familiar with it. As a result, software for the phone that can translate motions into text and speech is required. It attempts to provide dumb people with an effective and economical means to express them by converting motions to text and deaf people's speech to text and gestures. This application will create a better society where the community sees them as one and people will look into their abilities rather than disabilities. This application will create a better society where the community sees them as one and people will look into their abilities rather than disabilities.

Review of the application of artificial intelligence in sign language recognition system :

Authors:Oyeniran Oluwashina A., Oyeniyi Joshua O., Sotonwa Kehinde A., Ojo Adeolu O
Published on:Jul 2020

Communication is the process human beings understand what is said to them and the way they say or express their thoughts, needs and feelings to other people and this is mostly through speech. Although, when it comes to people with hearing impairment, sign language is inevitable. Artificial intelligence has greatly developed the teaching, learning and communication with sign language and obviously, artificial intelligence will be capable of resolving the future challenges that may arise in that regard. The application of AI in the recognition and elucidation of sign language for machine and human perception. Artificial intelligence will be capable of resolving future encounters that may arise in that regards.The artificial intelligence has ominously developed teaching, learning and communication with sign language.

Arabian Deaf and Dumb Communication system using wireless Flexible Sensor :

Author: Amal S. Eldesoky
Published on:Jan 2020

The deaf and dumb is the most pathological case which leads to various economic and social problems. So, it is important to develop an economical tool to facilitate an efficient

communication between Arabian deaf-dumb, and normal persons. As those people depend on using hand gestures to contact others. On other hand, Arabs use expressions not alphabet in their communication .In this work, a mobile smart system based on two stages is designed. First ,creating a digital code for the hand gestures using gloves flex sensors equipped with a three-axis accelerometer and a microcontroller. The digital results are compared to the corresponding words stored in the database .Then , translation of the matching word into both written text and voice. Second, the newly developed system allows Arabian deaf to translate words of ordinary people into gestures using a speech recognition system .The accuracy was over90 % without the need for a webcam, coloured gloves, or online translator. This protocol can be used for android systems in addition to ordinary computer systems.

Artificial Intelligence enabled virtual sixth sense application for the disabled :

Author: Aditya Sharma, Aditya Vats, Shiv Shankar Dash and Surinder Kaur
Published on:Mar 2020

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.

Assistive Devices for Visually, Audibly and Verbally Impaired People :

Author: A. Bhagyashree1, Akheelesh B Palled, Ranjith Kumar, Akshay Hegde, Saravana Kumar
Published on:July 2022

There are some people who don't have the ability to speak or they lose it in an accident. They find it difficult to express their thoughts or to convey their message to other people. In this project we propose a Sign Language Glove which will assist those people who are suffering from any kind of speech defect to communicate through gestures i.e. with the help of single handed sign language the user will make gestures of alphabets. The glove will record all the gestures made by the user and then it will translate these gestures into visual form as well as in audio form. This project uses an Arduino controller to control all the processes and flex sensors along with accelerometer sensors will track the movement of fingers as well as the entire palm. A LCDwill be used to display the user's gesture and a speaker to translate the gesture into audio signal is planned if possible for execution. This project can be further developed to recognize complex things like food, water, etc.

Smart Assistive Activity Recognition Device for Differently Abled People Based on Machine Learning -SAARD :

Author: Jayashree Agarkhed, Lubna Tahreem
Published on:2021

Science and Technology have made human life addictive to comfort, yet concurrently there exists an oppressed gathering of individuals who are battling for tracking down a creative way that can make their life easier for them. After concentrating and highlighting the problems faced by the differently abled people like blind and deaf, solving it through a device alone is a very hard task. A ton of exploration has been done on every issue and arrangements have been proposed independently. Objective of the smart assistive device SAARD (Smart Assistive Activity Recognition Device for Differently Abled People) is to recognize activity for differently abled people so; they feel confident and independent by helping them to know objects surrounding them. The Proposed device SAARD helps the differently abled people by taking images and giving the output in the form of audio. Along with that it also detects obstacles and surrounding sound which alert them.

Gesture Recognizing Smart System :

Author: Amrita Kumari, Abhijeet, Aman Sharma, Ankit Kumar Baliyan, Kiran, Ravneet Kaur
Publishing on:2019

For differently abled people like deaf or dumb, communication is a challenge. They make use of sign language which is not easily understandable by others and hence poses severe challenges and inconveniences for them in carrying out their day to day task. This work attempts to bridge the communication gap by designing a device that can convert the user"s sign language gestures to visual form. The primary focus of the work is to design a portable, intelligent, smart, and cost-effective system using flex sensors and accelerometer which identifies the extensive hand movements of the differently abled person while communicating using sign language and in effect can facilitate him/her in communicating with others. The portable device can capture the user"s sign language gestures, convert it to text and output the translated text to PC serial monitor, which can easily be understood and can also be converted to voice to be heard by the normal audience. The work also encompasses the design of mobile applications for further assistance to differently abled persons.

SIGN LANGUAGE RECOGNITION:

Authors:Pratibha Gupta, Priya Rajput, Priyanka Katiyar, Srishti Sharma, Shaivya Shukla, Dr. Umesh Dwivedi
Published on:5/May/2022

To establish communication between two people it is important for them to have knowledge and understanding of a common language. However, people with hearing disabilities need Sign language to communicate. The normal people find little difficulty in understanding and interpreting the gesture made by a deaf and dumb people. The work presented in this paper aims to reduce these difficulties. The intent of convolution neural networks is to get the appropriate classification. Our project is deployed in the form of a web based project which takes access to the webcam through which you can learn the Indian Sign Language in a simple way. This project consists of a kid- friendly user interface which makes it easier to use and learn.

INDIAN AND ENGLISH LANGUAGE TO SIGN LANGUAGE TRANSLATOR- AN AUTOMATED PORTABLE TWO WAY COMMUNICATOR FOR BRIDGING NORMAL AND DEPRIVED ONES:

Authors:Dr.L.Priya, A.Sathya, S. Kanaga Suba Raja
Published on:2020

Sign languages are the kind of language that is expressed via the manual sign stream together with non-manual components. Whenever communities of deaf folks exist, sign languages have

developed as handy suggests that of communication and that they kind the core of native deaf cultures. Living with a incapacity isn't simple, however the majority United Nations agency are into disability usually develop alternative heightened senses and skills, associated area unit able to live an nearly traditional life and have a heightened sense of hearing and bit, whereas the deaf and mute area unit able to browse lips and communicate mistreatment language. The Mobile Application "Sign Translator" has been designed and developed in such a manner, in order that the essential necessities for building these quiet answers are being glad. This could be fitted with deaf folks, hearing impaired folks and traditional folks to speak with one another. Hence, there exists a large usage behind these quiet solutions.

A Systematic Mapping of Translation-Enabling Technologies for Sign Languages:

Authors:Luis Naranjo-Zeledón , Jesús Pearl, Antonio Ferrández and Mario Chacón-Rivas
Published on:18/Sep/2019

Sign languages (SL) are the first language for most deaf people. Consequently, bidirectional communication among deaf and non-deaf people has always been a challenging issue. Sign language usage has increased due to inclusion policies and general public agreement, which must then become evident in information technologies, in the many facets that comprise sign language understanding and its computational treatment.: Sign languages (SL) are the first language for most deaf people. Consequently, bidirectional communication among deaf and non-deaf people has always been a challenging issue. Sign language usage has increased due to inclusion policies and general public agreement, which must then become evident in information technologies, in the many facets that comprise sign language understanding and its computational treatment.In this systematic mapping study, we found existing literature directly related to technologies meant to facilitate sign languages machine translation. Our evaluation reached the topics investigated, the frequency of publications, the venues of publications, and the specific approaches in use.

Wearable Interfaces and Algorithms for Hand Gesture Recognition:

Authors:Shuo Jiang, Student Member, IEEE, Peiqi Kang, Xinyu Song, Student Member, IEEE, Benny P.L. Lo, Senior Member, IEEE, and Peter B. Shull, Member, IEEE
Published on:2020

Classification algorithms for predefined, fixed hand poses and regression algorithms for continuous finger and wrist joint angles. Conventional machine learning algorithms, including linear discriminant analysis, support vector machines, random forests, and non-negative matrix factorization, have been widely used for a variety of gesture recognition applications, and deep learning algorithms have more recently been applied to further facilitate the complex relationship between sensor signals and multi-articulated hand postures. Future research should focus on increasing recognition accuracy with larger hand gesture datasets, improving reliability and robustness for daily use outside of the laboratory, and developing softer, less obtrusive interfaces.Finally, future potential directions including larger gesture sets, increased robustness and soft systems were discussed. This paper can provide readers with a detailed understanding and insights on wearable interfaces for hand gesture recognition.

Semantic Deep Learning to Translate Dynamic Sign Language:

Authors:Eman K. Elsayed, Doaa R. Fathy
Published on:5/Nov/2020

Dynamic Sign Language Recognition aims to recognize hand gestures of any person. Dynamic Sign Language Recognition systems have challenges in recognizing the semantic of hand gestures.. This research proposes a semantic translation system for dynamic hand gestures using deep learning and ontology. We used the proposed MSLO (Multi Sign Language Ontology) in the semantic translation step. We applied the proposed system on three dynamic gesture datasets from color videos. The recognition accuracy average was 97.4%. We did all the training and testing processes on the Graphics Processing Unit with the support of Google Colab. Using "Google Colab" in the training process decreases the average run time by about 87.9%.In the future, this system may be used in continuous semantic recognition of sign language in a mobile chat system. We plan to include the development of the Arabic sign language semantic using MSLO, Improvements in the deep learning framework will also be made, which will include a higher degree of user modalities such as facial expression, head, and body actions.