Real-Time Communication System Powered By AI For Specially Abled

LITERATURE SURVEY

1.INTRODUCTION:

Literature survey is mainly carried out in order to analyse the background of the current project which helps to find out flaws in the existing system and guides on which unsolved problems we can work out. So, the following topics not only illustrate the background of the project but also uncover the problems and flaws which motivated to propose solutions and work on this project.

1.1 LITERATURE SURVEY:

Literature survey is the documentation of a comprehensive review of the published and unpublished work from secondary sources data in the areas of specific interest to the researcher. The library is a rich storage base for secondary data and researchers used to spend several weeks and sometimes months going through books, journals, newspapers, magazines, conference proceedings, doctoral dissertations, masters theses, government publications and financial

reports to find information on their research topic. Reviewing the literature on the topic area at this time helps the researcher to focus further interviews more meaningfully on certain aspects found to be important is the published studies even if these had not surfaced during the earlier questioning. So, the literature survey is important for gathering the secondary data for the research which might be proved very helpful in the research. The literature survey can be conducted for several reasons. The literature review can be in any area of the business.

1.2 PAPER 1:

Hand gesture, Text and Speech Translation and Recognition System for specially abled people using AI.

ABSTRACT:

Communication is the process of exchanging ideas, thoughts, feelings, and information in the form of verbal or non-verbal messages. But for a person who cannot hear is visual, but not auditory. This person lacks the amenities which a normal person owns. Sign language is an important and only method of communication for deaf-dumb people. As sign language is a formal language employing a system of hand gestures for communication. To overcome the complexity, the artificial speech system is introduced. An artificial speech system will be very helpful for them to convey their thoughts to others. Using the speech to text conversion technique, on-screen text provides a better way for the people with Hearing impairment to visually read which is in audio. The vocally impaired people can interact with normal people using our work which recognizes sign languages and converts them into on-screen text as well as audio sounds.

1.3 PAPER 2:

Predicting Sentiments to an accuracy matching the gesture recognized for the specially-abled.

ABSTRACT:

Sentiment analysis being a polarity based detection technique, is going around in the academic research and industry domain for quite a long time, not only seeing the economic benefits to both fields alike, but also the significance in understanding human behaviour. In this work, Natural Language Processing (NLP) is done to accurately recognize the sentiment behind the gestures of a specially abled individual, to analyse their behaviours in real time considering different application platforms.

1.4 PAPER 3:

Machine Learning based Intelligent System for Safeguarding Specially Abled People.

ABSTRACT:

In the present age, it's hard to emphasis and handle the challenges experienced by specially abled persons, like those who are visually, audibly, or vocally handicapped, with a single device. Every topic has been systematically researched, and resolutions have been provided independently. The objective of this paper is to introduce a single device that is simple, quick, accurate, and effective. This paper presents a combination of devices which apart from safeguarding the blind deaf and dumb people will also help them in their daily lives. The proposed work comprises of security locket and camera that would use the concept of Machine Learning for the implementation. For the object detection by providing the eye for the blind, machine learning algorithms are used. The proposed work aims to create a user-friendly technology for communication of physically liable people which fulfils the basic amenities of the specially abled persons aiming easy-to-use interface, convenience, portability and cost effectiveness. This Paper introduces an idea which help the disabled people use and will protect the blind deaf and dumb people from the unknown people or thieves from getting harmed and also helpful for maintaining health issues using the concepts of machine learning.

1.5 PAPER 4:

Sign Language Recognition Using Convolutional Neural Network

ABSTRACT:

In today's world, communication is very important. A language is needed to communicate. Most of the specially abled people use a different language for communication called sign language. This language helps them to communicate with other people with their hand expressions. These expressions will be different from country to country. In this paper, American sign language is used. This paper deals with helping specially abled people to communicate with people who don't know sign language by using the approaches of computer vision and deep learning. Our paper uses convolutional neural network to solve this problem. The first part of our paper focuses on capturing different hand expressions in the form of video by the person and translating them to text using a convolutional neural network. The other part focuses on the reverse of it, showing GIF upon converting text. Integrating these two parts will help in two-way communication.

1.6 PAPER 5:

Messaging and Video Calling Application for Specially Abled people using Hand Gesture Recognition.

ABSTRACT:

According to the World Health Organization (WHO) over 5% of the world's population have impaired hearing and speaking loss. It is very difficult for people with disabilities to communicate. This paper proposes a system to overcome these barriers and allow everyone to interact with each other irrespective of their disabilities and facilitate everyone to communicate with each other through messaging and video calling irrespective of their disabilities. This paper proposes a vision-based application which can be used for the communication of such people using text and video calling. For better accuracy various object detection and image classification algorithms are implemented. The application uses Indian Sign Language as the dataset.

1.7 PAPER 6:

Machine Learning methods for Indian Sign Language Recognition.

ABSTRACT:

The general population has no understanding of the sign language, which hampers the communication between the specially abled and the general population. We are proposing a methodology to bridge this gap. We have used two approaches to solve this problem. First using the depth+RGB data captured using a Microsoft Kinect and predicting the gestures in real time. For segmenting the hand region from the data obtained by the RGB-D camera we used 3D reconstruction and affine transformation to map the depth and RGB information. Convolutional neural networks were used and segmented hand images/videos were used as an input to them. 36 static hand gestures from Indian Sign Language were trained and a classification accuracy of 98.81% was achieved on the test data. This model also showed a good performance when we transfer learned the American Sign Language giving a classification accuracy of 97.71%. LSTM with a convolutional kernel was used for training 10 dynamic gestures. This model achieved a classification accuracy of 99.08%. But as soon as we implemented this system, we figured out there is an inherent problem with this methodology. It is practically unreasonable to carry the bulky Microsoft Kinect around along with a system capable of performing the computation to communicate with people. We attempted to solve this problem using semantic segmentation of the hands. We used U-Net with ResNet 101 as the backbone for the same. Semantic segmentation utilises the input from a normal RGB camera which completely removes the necessity of using a RGB-D Kinect camera. We performed multi-class semantic segmentation which gave an IOU score of 0.9920 and an F1 score of 0.9957 on the training data. The above models performed extremely well in real time.

1.8 PAPER 7:

Predicting Sentiments to an accuracy matching the gesture recognized for the specially-abled.

ABSTRACT:

Sentiment analysis being a polarity based detection technique, is going around in the academic research and industry domain for quite a long time, not only seeing the economic benefits to both fields alike, but also the significance in understanding human behavior. In this work, Natural Language Processing (NLP) is done to accurately recognize the sentiment behind the gestures of a specially abled individual, to analyse their behavior in real time considering different application platforms.

1.9 PAPER 8:

Machine Learning based Intelligent System for Safeguarding Specially Abled People.

ABSTRACT:

The objective of this paper is to introduce a single device that is simple, quick, accurate, and effective. This paper presents a combination of

devices which apart from safeguarding the blind deaf and dumb people will also help them in their daily lives. The proposed work comprises of security locket and camera that would use the concept of Machine Learning for the implementation. For the object detection by providing the eye for the blind, machine learning algorithms are used. The proposed work aims to create a user-friendly technology for communication of physically liable people which fulfils the basic amenities of the specially abled persons aiming easy-to-use interface, convenience, portability and cost effectiveness.

1.10 PAPER 9:

Advanced Applications of Neural Networks and Artificial Intelligence

ABSTRACT:

Artificial Neural Network is a branch of Artificial intelligence and has been accepted as a new computing technology in computer science fields. This paper reviews the field of Artificial intelligence and focusing on recent applications which uses Artificial Neural Networks (ANN‟s) and Artificial Intelligence (AI). It also considers the integration of neural networks with other computing methods Such as fuzzy logic to enhance the interpretation ability of data. Artificial Neural Networks is considering as major soft-computing technology and have been extensively studied and applied during the last two decades. The most general applications where neural networks are most widely used for problem solving are in pattern recognition, data analysis, control, and clustering. Artificial Neural Networks have abundant features including high processing speeds and the ability to learn the solution to a problem from a set of examples. The main aim of this paper is to explore the recent applications of Neural Networks and Artificial Intelligence and provides an overview of the field, where the AI & ANN‟s are used and discusses the critical role of AI & NN played in different areas.

1.11 PAPER 10:

Applications of Artificial Neural Networks in Medical Science

ABSTRACT:

Computer technology has been advanced tremendously and the interest has been increased for the potential use of 'Artificial Intelligence (AI)' in medicine and biological research. One of the most interesting and extensively studied branches of AI is the 'Artificial Neural Networks (ANNs)'. Basically, ANNs are the mathematical algorithms, generated by computers. ANNs learn from standard data and capture the knowledge contained in the data. Trained ANNs approach the functionality of small biological neural cluster in a very fundamental manner. They are the digitized model of biological brain and can detect complex nonlinear relationships between dependent as well as independent variables in a data where human brain may fail to detect. Nowadays, ANNs are widely used for medical applications in various disciplines of medicine especially in cardiology. ANNs have been extensively applied in diagnosis, electronic signal analysis, medical image analysis and radiology. ANNs have been used by many authors for modeling in medicine and clinical research. Applications of ANNs are increasing in pharmacoepidemiology and medical data mining. In this paper, authors have summarized various applications of ANNs in medical science.