LITERATURE SURVEY

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

(By Naresh Thoutam and his students from Sandeep Institute of Technology and Research Centre, Nashik, India)

In order to overcome the complexity of communication by specially abled people, the artificial speech system is introduced. An artificial speech system will be very helpful for them to convey their thoughts to others.. A glove is designed using flex sensor to communicate between Dumb and normal people and assigning particular message for each gesture .The gestures created by the glove will be sent to normal person's phone and will also be displayed on LCD. A Braille Embosser is designed to communicate with blind person having servomotors to imprint Braille characters with the advancement in the technology. User have to enter number of samples to store in the database. The number of samples should be more than 5 in order to get better accuracy. User have to select the folder where the images will get saved. The captured images go under pre-processing stage in order to enhance the property of an image. Pre-Processing is basically done to remove the object and background of an image and focus on the hand gestures only. The preprocessed image is then represented in the form of black and white pixels which basically means binarized image. PCA algorithm ,used to extract the feature of an image, is applied on the captured images in order to extract the best featured image from the database. PCA converts the images into some independent linear set of variables which refers to the information in the original data which is referred as principal components. As a result, the system is connective to the user's social, emotional and cognitive development.

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

(By Jaganath Prasad Mohanty from National Institute of Technology, Rourkela, India)

Specially abled individuals, specifically the deaf and dumb, have a way of communication, which is usually hand gestures. Special purpose cameras like Kinect were used for assisting in interpreting actual gestures, but with the advent of machine learning algorithms like, artificial neural networks (ANN), k-nearest neighbors (kNN), naive Bayes (NB), and random forest (RF), even a web camera can be of optimal usage for predicting keywords portraying dialect relevant to the actual word. This work is based on recongising dynamic images taken from a camera in real time, and converting to Convolutional Neural Network (CNN)

based data set for generating respective keywords relevant to certain gestures. With the aid of Jupyter platform, a python code was inscribed using NLTK, traditional NLP library to categorize an input data as positive or negative sentiment which can be to a calculated accuracy. The step includes attaching stop words and punctuation and Stemming, the process of converting a word to its most general form. Based on prior work in gesture recognitions, sentiment analysis is used to structure polarity based raw data in textual format by automatically tagging the keywords. Using Naive Bayes theorem and logistic regression function, a cost estimation for improvement in accuracy is proposed. A behavior pattern is analysed and tagged as positive or negative based on the training set of recognized keywords. It can be linked to industry inputs to provide services adherent to their needs. As sentiment analysis is a field of research in the text mining field, it can be used for delivering best services to specially abled public and predict their choices by a service provider for better performing business economics.

3. Two-way Smart Communication System for Deaf & Dumb and Normal People

(IEEE paper by Areesha Gul, Batool Zehra and others from Sir Syed University of Engineering and Technology, Karachi, Pakistan)

The system consists of two main parts: The first part is for Deaf & Dumb person to convey their messages to a normal person by using our hardware system and the second one is for a normal person who can also respond them easily without learning a sign language by using our Android Application. This ensures a two-way smart communication system and will make life less demanding for them. The overall accuracy of the system is 92.5%, with both the hands involved. The hand gesture is recognized, features are extracted, gesture is converted into voice and the speech is then converted into text. we tend to build Android Application within which the communication module of projected system can acquire information (voice) from a standard person through microphone, and then information convert into text and send through Android Application to Raspberry pi attached with TFT Led screen within the kind of text, and also extra options like emergency are obtainable within the Android Application. The concept applauds a new way of communication by linking hand gesture recognition and gesture to voice conversion. To back this concept, an android application will be created with the help of Google API for speech to text conversion and also have much-needed features like emergency calling and location tracking for caretaking purposes.