Deaf And Mute People Language Identification Using Machine Learning

Akhil RS[1], Dhas Rahul[2], Ghayal Sudarshan[3], Vaidya Omkar[4], Prof.GS Mate[5]

[1, 2, 3, 4, 5] Dept of Information Technology
[1, 2, 3, 4, 5] Rajashi Shahu College Of Engineering Pune

Abstract- *The only features human beings use to communicate with each other are speech and vocabulary. Because of our ability to hear, we can see one another's feelings. In order to give instructions right now, we can even use speech recognition. But what if it can't be heard and you can't finally talk about it. Visual communication continues to be the main contact method of people with developmental disabilities and deaf people, and automatic comprehension of sign language is therefore a comprehensive area of study intended to ensure their independent lives. With the use of image recognition and artificial intelligence, a number of techniques and innovations have been proposed in this field. To recognise or convert the signs into an appropriate sequence, each simple sign detection system is built. In this article, the dual-handed Indian foreign languages are collected as a collection of images and interpreted with the aid of Python and then converted into speech and text. The proposed approach is meant to give voice to speechless persons.*

Keywords*-* Image processing, noise removal, feature extraction and matching, static and dynamic gesture.

I. INTRODUCTION

Sign languages are vibrant on a world-wide basis. There are several sign languages in the country that are widely used, such as ASL (American Sign Language) ISL (Indian Sign Language), BSL (Bangladesh Sign Language), MSL (Malaysian Sign Language). These languages are Designed and Created with a lot of effort and realistic research to make it possible for mute people. Any language shall be developed with its term and its meaning.

This Language is created as "Sign" and "Action of the Sign." And we can't help them understand the significance of a symbol by writing a phrase here. Since they're deaf and can't listen from birth, we can't teach certain terms.

Artificial intelligence is an implementation of machine learning (AI) that allows structures its opportunity to continuously know or build on knowledge without being directly programmed. Artificial intelligence focuses on the development of computer programmes which can view information and data about themselves.

The principle of identification of gestures is to create a context in which individual human gestures can be recognised and used for the transmitting of knowledge. A camera shows the motions of the human body in a gesture recognition device and transmits data to a device that uses gestures as inputs to monitor devices or applications. Creating a human-computer interface is the concept of creating a hand motion recognition system by using recognised movements to access usable data.

II. PROBLEM STATEMENT

A random person visits a deaf person and if deaf person is in trouble and trying to explain it then it is very difficult to understand exactly what he is trying to say. Delay in detecting his Sign Language can turn into a big critical problem for that deaf person. These kinds of people cannot live a normal life. They face communication issues at every point. Also they get boundaries and limitations to their dreams and professional aims. Hence they get demotivated and Inferiority Complex.

III. MOTIVATION

To help people who do not know sign language. To help the clear communication between normal people and deaf mute people.

IV. ALGORITHM

Convolutional Neural Network:

Artificial Intelligence has been witnessing a monumental growth in bridging the gap between the capabilities of humans and machines. Researchers and enthusiasts alike, work on numerous aspects of the field to make amazing things happen. One of many such areas is the domain of Computer Vision.

The agenda for this field is to enable machines to view the world as humans do, perceive it in a similar manner and even use the knowledge for a multitude of tasks such as Image & Video recognition, Image Analysis & Classification, Media Recreation, Recommendation Systems, Natural Language Processing, etc. The advancements in Computer Vision with Deep Learning have been constructed and perfected with time, primarily over one particular algorithm .

The architecture of a ConvNet is analogous to that of the connectivity pattern of Neurons in the Human Brain and was inspired by the organization of the Visual Cortex. Individual neurons respond to stimuli only in a restricted region of the visual field known as the Receptive Field. A collection of such fields overlap to cover the entire visual area.
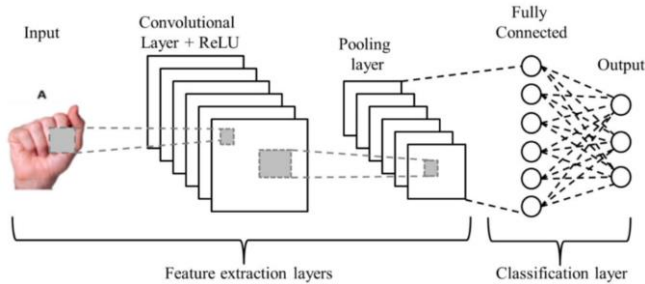

V. EXISTING SYSTEM

The field of sign language to text is less advanced, although some recent breakthroughs have been made with data gloves for positional extraction. We are seeking to bridge cultural gaps with technology as a tool. We plan to make technologies accessible to deafmutes, too, to allow them to communicate better with people who do not know sign language .

VI. SYSTEM ARCHITECTURE
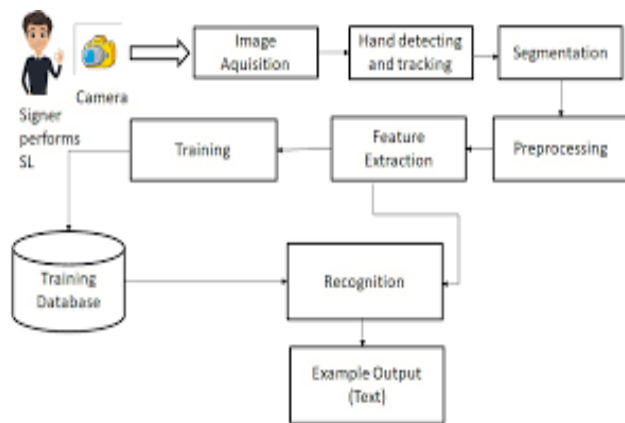
VII. EXPERIMENT OUTPUT
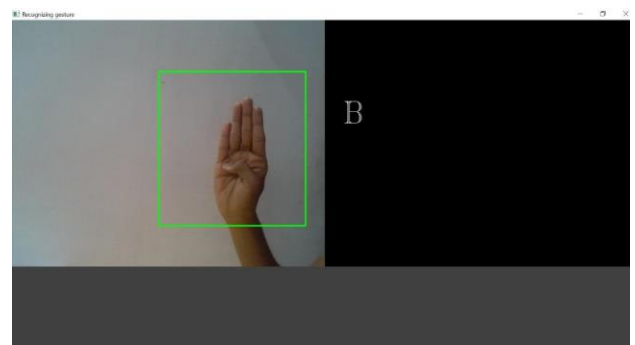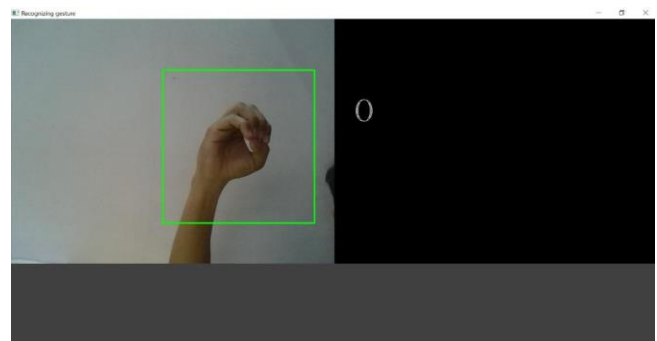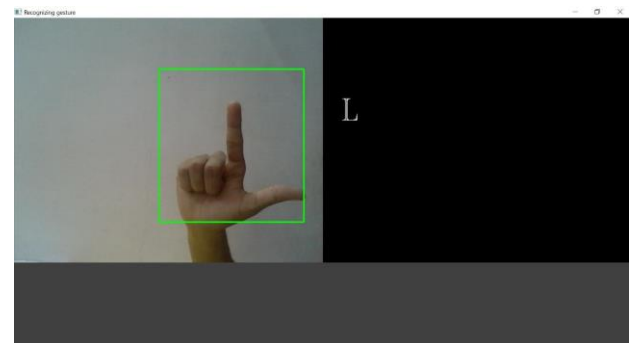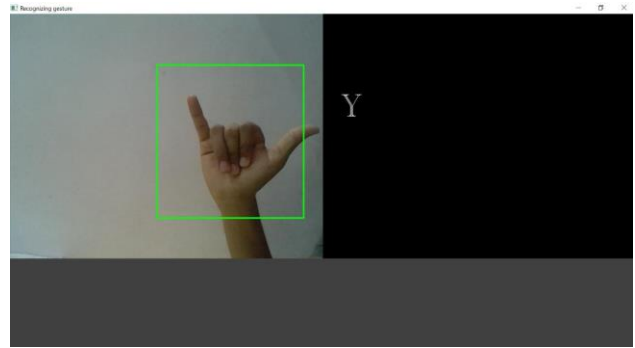
VIII. CONCLUSION

The initialization was then achieved for recording live streaming of the camera. Two motion detections, like a palm and a hand, of a green rectangle shaped by integral pictures. The second stage is the extracted text of the file, which is compared to the stored positive negative integral

image dataset and performs the fingertip monitoring by signal detection.

REFERENCES

[1] 2015,Truong Quang Vinh, "Real-Time Traffic Sign Detection and Recognition System Based on FriendlyARM Tiny4412 Board".

[2] 2016,Rafael C. Gonzalez and Richard E. Woods, "Digital Image Processing", Third Edition, - Pearson Education, pp. 864-874.

[3] Wang Jingqiu, Jhang Ting ," ARM Based Gesture Recognition System using data glove", 26th Chinese control and Decision Conference,2016.

[4] Shubhangi G Shinde, Rajashri R Itkarkar, Anil kumar,"Gesture to speech conversion For Sign Language Recognition", International Journal of Innovation and advancement in Computer science, Volume 6, Issue 9 , Sep 2017.

[5] S.K.Imam Basha, S.Ramasubba Reddy," Speaking System To Mute People Using Hand Gestures", International Research Journal of Engineering and Technology, Volume 05, Issue:09, Sep 2018.

[6] Ashwini V Rewatkar, Abid G M Sheikh, Mohini S Rakshak, Neha D.Ranyat,"Implementation of Gesture To Voice Conversion For Hearing and Speech Diability, March 2016.

[7] Sunitha K A, Anitha Sarswathi P, Aarthi M, Jayapriya K ,Lingam Sunny ,"Deaf Mute Communication Interpreter" International Journal of applied Engineering Research-A Review, Volume 11,pp 290- 296,2016.

[8] Anbarasi Rajamohan, Hemavathy R, Dhanalakshmi M. "Deaf-Mute Communication Interpreter", International Journal of Scientific Engineering and Technology",Volume 2, pp:336-341, May 2015.

[9] Jing-Hao Sun,Ting-Ting Ji, Shu-Bin Zhang, Jia-Kui Yang, Guang-Rong Ji "Research on the Hand Gesture Recognition Based on Deep Learning",07 February 2019

[10] Mokhtar M. Hasan, Pramoud K. Misra, (2011). "Brightness Factor Matching For Gesture Recognition System Using Scaled Normalization", International Journal of Computer Science Information Technology (IJCSIT), Vol. 3(2).

[11] Simei G. Wysoski, Marcus V. Lamar, Susumu Kuroyanagi, Akira Iwata, (2002). "A Rotation Invariant Approach On Static-Gesture Recognition Using Boundary Histograms And Neural International Journal of Artificial Intelligence Applications (IJAIA), Vol.3, No.4, July 2012

[12] Stergiopoulou, N. Papamarkos. (2009). "Hand gesture recognition using a neural network shape fitting technique," Elsevier Engineering Applications of Artificial Intelligence, vol. 22(8), pp. 1141– 1158, doi: 10.1016/j.engappai.2009.03.008

[13] V. S. Kulkarni, S.D.Lokhande, (2010) "Appearance Based Recognition of American Sign Language Using Gesture Segmentation", International Journal on Computer Science and Engineering (IJCSE), Vol. 2(3), pp. 560-565.

[14] Geethu G Nath and Arun C S, "Real Time Sign Language Interpreter," 2017 International Conference on Electrical, Instrumentation, and Communication Engineering (ICEICE2017)

[15] Kumud Tripathi, Neha Baranwal and G. C. Nandi, "Continuous Indian Sign Language Gesture Recognition and Sentence Formation", Eleventh International MultiConference on Information Processing2015 (IMCIP-2015), Procedia Computer Science 54 (2015) 523 – 531