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Pharmacy Rank - 88
Innovation Rank Band (51-100)

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DEPARTMENT OF COMPUTER SCIENCE
PROJECT PRESENTATION (KCS 851)

SIGN LANGUAGE RECOGNITION SYSTEM

Prof. Raj Kumar
(Assistant Professor &Addl. HOD)

PROJECT MEMBERS:-

- **VIDHI - 2000290120188**
- **VISHAKHA RANA:- 2000290120192**
- **SANSKRITI BAJPAI:- 2000290120135**

PROBLEM STATEMENT

Speech impaired people use hand signs and gestures to communicate. Normal people face difficulty in understanding their language as they don't recognize the sign made by them ,this make a barrier.

Hence there is a need of a system which recognizes the different signs, gestures and conveys the information to the normal people. It bridges the gap between physically challenged people and normal people.

GOALS AND OBJECTIVES

Objective n° 1

The primary objective of the system is to facilitate communication and enable speech-impaired to communicate more effectively with those who do not understand sign language.

Objective n° 2

The project's core objective is to develop a robust sign language recognition system capable of accurately interpreting static hand gestures.

Objective n° 3

Another central objective is the conversion of recognized sign language gestures into spoken language. This involves initiating voice media through the system when the input image matches with the predefined dataset.
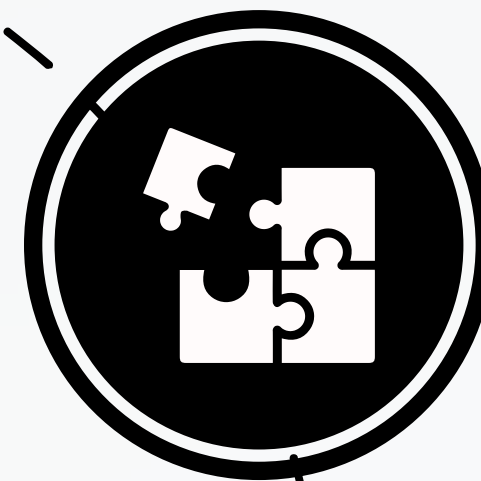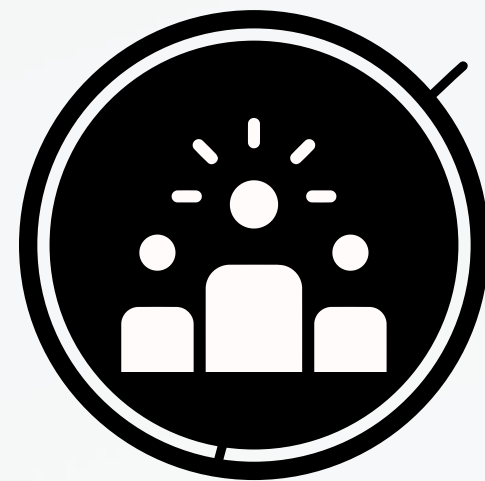
TECHNOLOGY USED

01

02

03

04

IMAGE RECOGNITION

Image recognition is a mechanism used to identify an object within an image and to classify it in a specific category.

OPEN CV

It is the huge open-source library for computer vision, machine learning, and image processing.By using it, one can process images and videos.

NUMPY

It is a library for the Python language, adding support for large collection of high-level mathematical functions to operate.

CNN

A convolutional neural network (CNN) is a type of artificial neural network used primarily for image recognition and processing, due to its ability to recognize patterns in images.
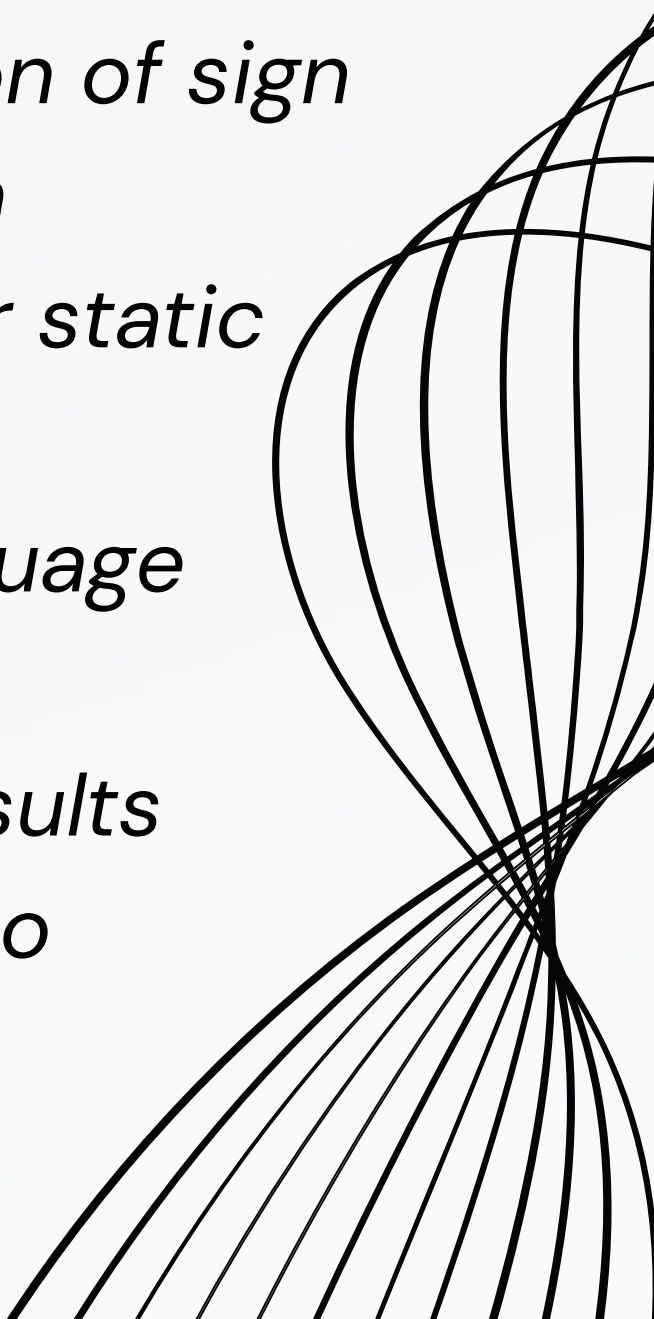
LITERATURE SURVEY

Sign language is used by deaf and hard hearing people to exchange information between their own community and with other people. Computer recognition of sign language deals from sign gesture acquisition and continues till text/speech generation. Sign gestures can be classified as static and dynamic. However static gesture recognition is simpler than dynamic gesture recognition but both recognition systems are important to the human community. The sign language recognition steps are described in this survey. The data acquisition, data preprocessing and transformation, feature extraction, classification and results obtained are examined. Some future directions for research in this area also suggested.

LITERATURE SURVEY

PAPER TITLE:–SIGN LANGUAGE RECOGNITION
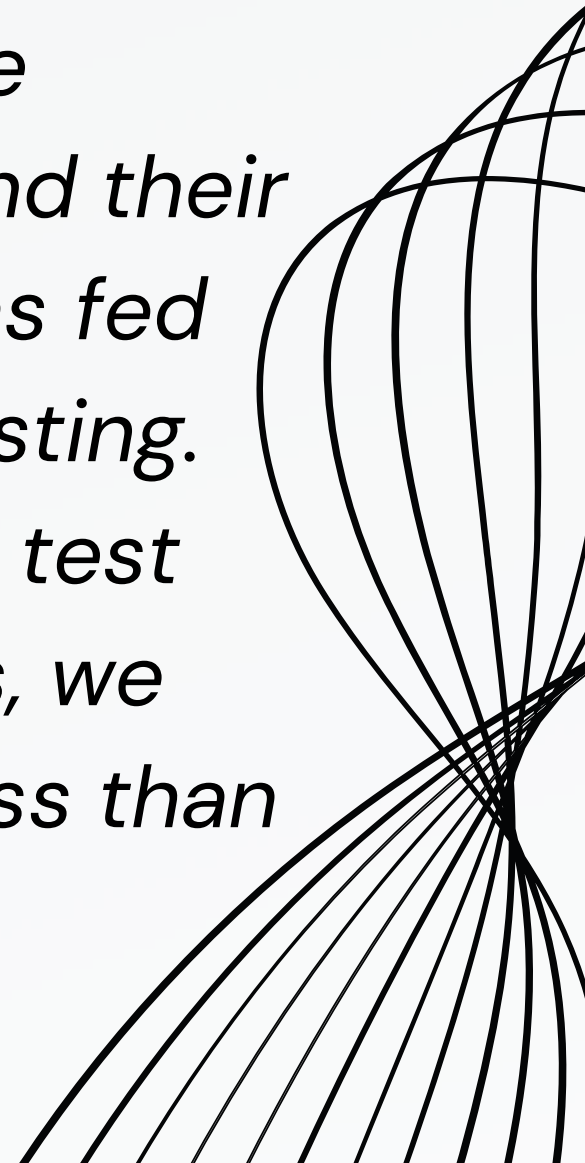AUTHOR NAME:–KARAN BHAVSAR, RAJ GHATIYA, AARTI GOHIL, DEVANSHI THAKKAR, BHUMI SHAH
YEAR OF PUBLISHING:–MAY 2021

Every day we see many people who are facing illness like deaf, dumb and blind etc. They face difficulty to interact with others. Previously developed techniques are all sensors based and they didn't give the general solution. The major goal of the proposed project is to create a cost-effective system that uses Smart Gloves to provide voice to the silent. Using a flex sensor and a microprocessor, the suggested method converts sign language into text and speech. It means that communication between two communities will not be hampered by the use of smart gloves.

LITERATURE SURVEY

This paper focuses on experimenting with different segmentation approaches and unsupervised learning algorithms to create an accurate sign language recognition model. To more easily approach the problem and obtain reasonable results, we experimented with just up to 10 different classes/letters in the our self-made dataset instead of all 26 possible letters. We collected 12000 RGB images and their corresponding depth data using a Microsoft Kinect. Up to half of the data was fed into the autoencoder to extract features while the other half was used for testing. We achieved a classification accuracy of 98% on a randomly selected set of test data using our trained model. In addition to the work we did on static images, we also created a live demo version of the project which can be run at a little less than 2 seconds per frame to classify signed hand gestures from any person

LITERATURE SURVEY

Sign Language is mainly used by deaf (hard hearing) and dumb people to exchange information between their own community and with other people. Sign Language Recognition (SLR) deals with recognizing the hand gestures acquisition and continues till text or speech is generated for corresponding hand gestures. Here hand gestures for sign language can be classified as static and dynamic.However, static hand gesture recognition is simpler than dynamic hand gesture recognition, but both recognition is important to the human community.Once the model Successfully recognizes the gesture the corresponding English text is generated and then text can be converted to speech.This model will be more efficient and hence communicate for the deaf (hard hearing) and dump people will beeasier. In this paper, they discussed how Sign Language Recognition is done using Deep Learning.

LITERATURE SURVEY

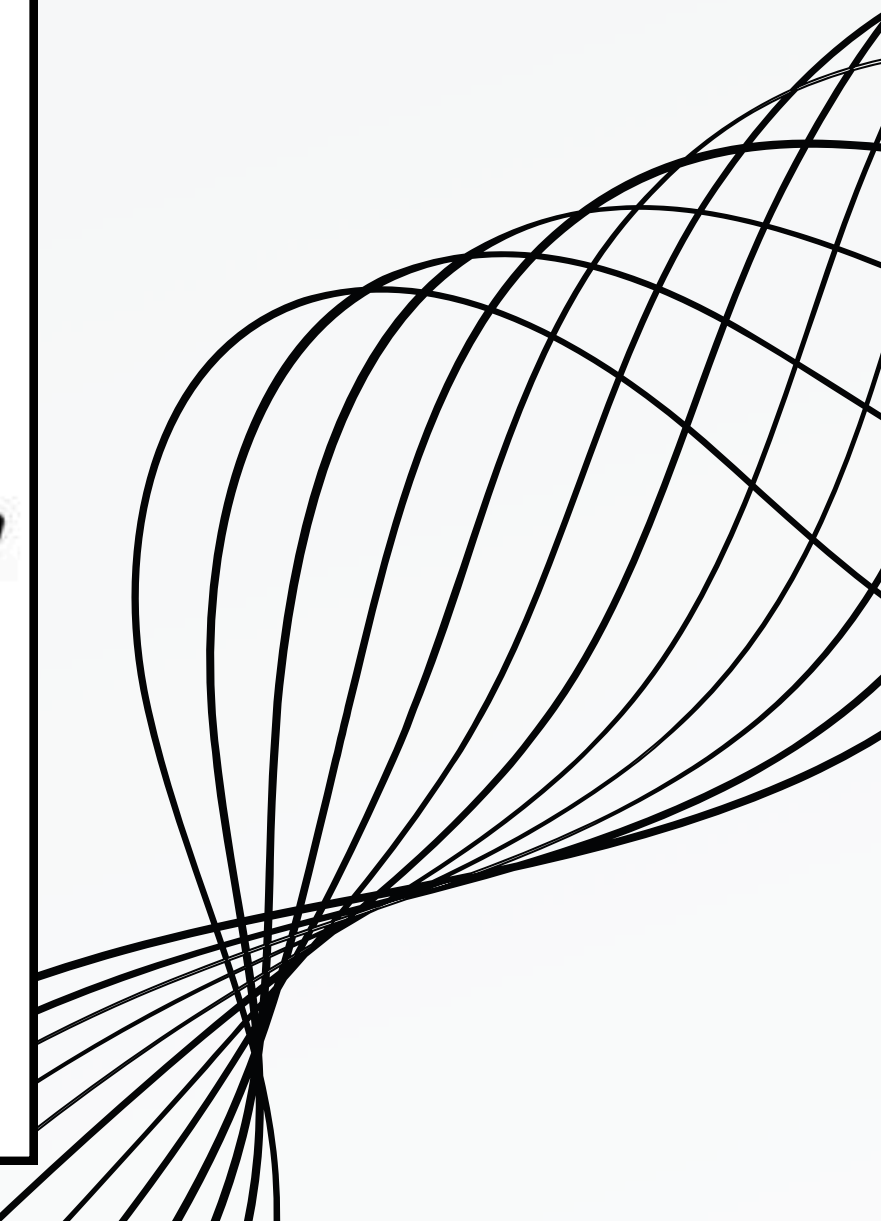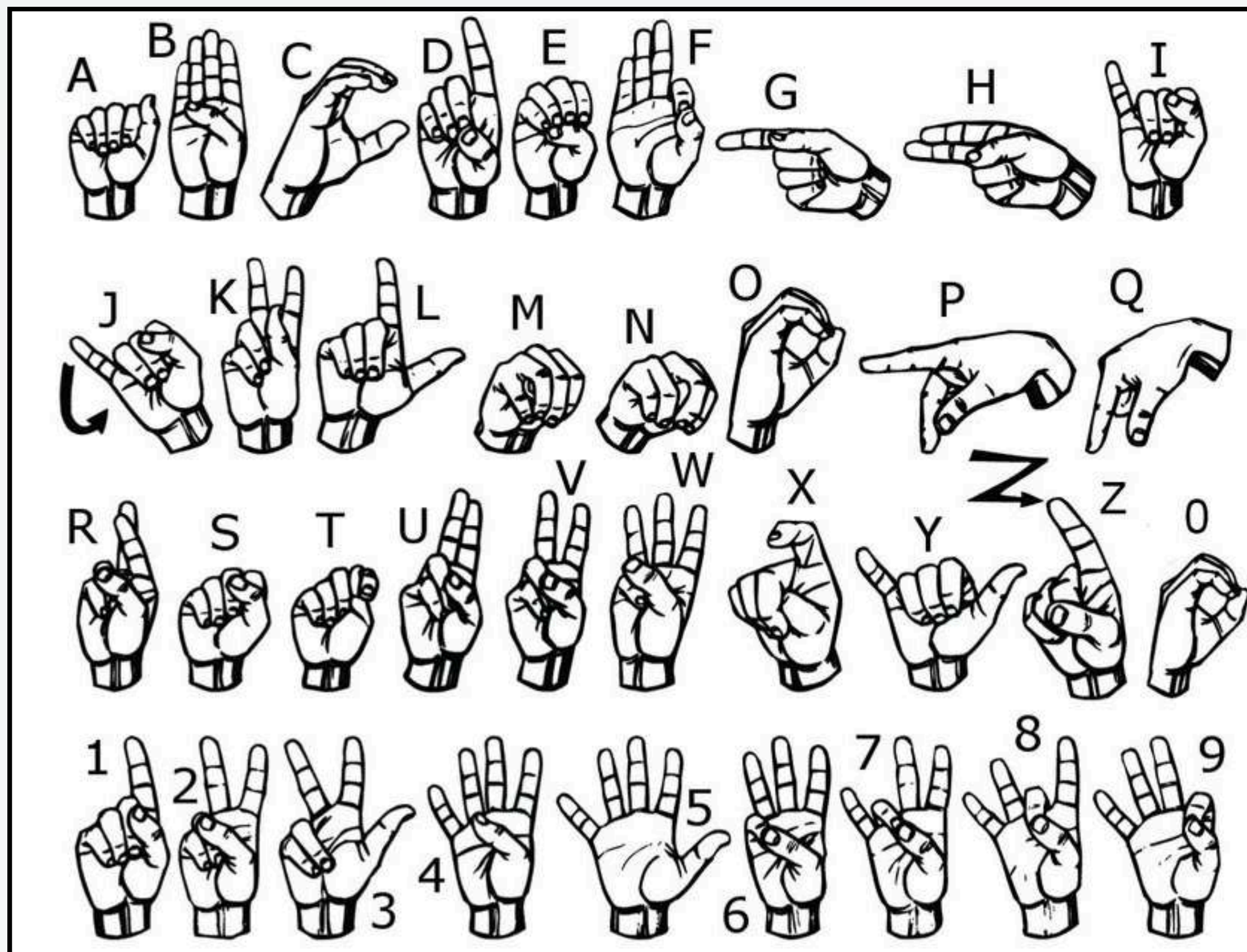**PAPER TITLE:–SIGN LANGUAGE RECOGNITION SYSTEMS: A DECADE SYSTEMATIC LITERATURE REVIEW**
AUTHOR NAME:–PARTEEK BHATIA AND ANKITA WADHAWAN
**YEAR OF PUBLISHING:–JANUARY 2019**

Despite the importance of sign language recognition systems, there is a lack of a Systematic Literature Review and a classification scheme for it. This is the first identifiable academic literature review of sign language recognition systems. It provides an academic database of literature between the duration of 2007–2017 and proposes a classification scheme to classify the research articles. One hundred and seventeen research articles were subsequently selected, reviewed and classified. The Systematic Literature Review and classification process was verified independently. Literature findings of this paper indicate that the major research on sign language recognition has been performed on static, isolated and single handed signs using camera. Overall, it was hoped that the study may provide readers and researchers a roadmap to guide future research and facilitate knowledge accumulation and creation in the field of sign language recognition.
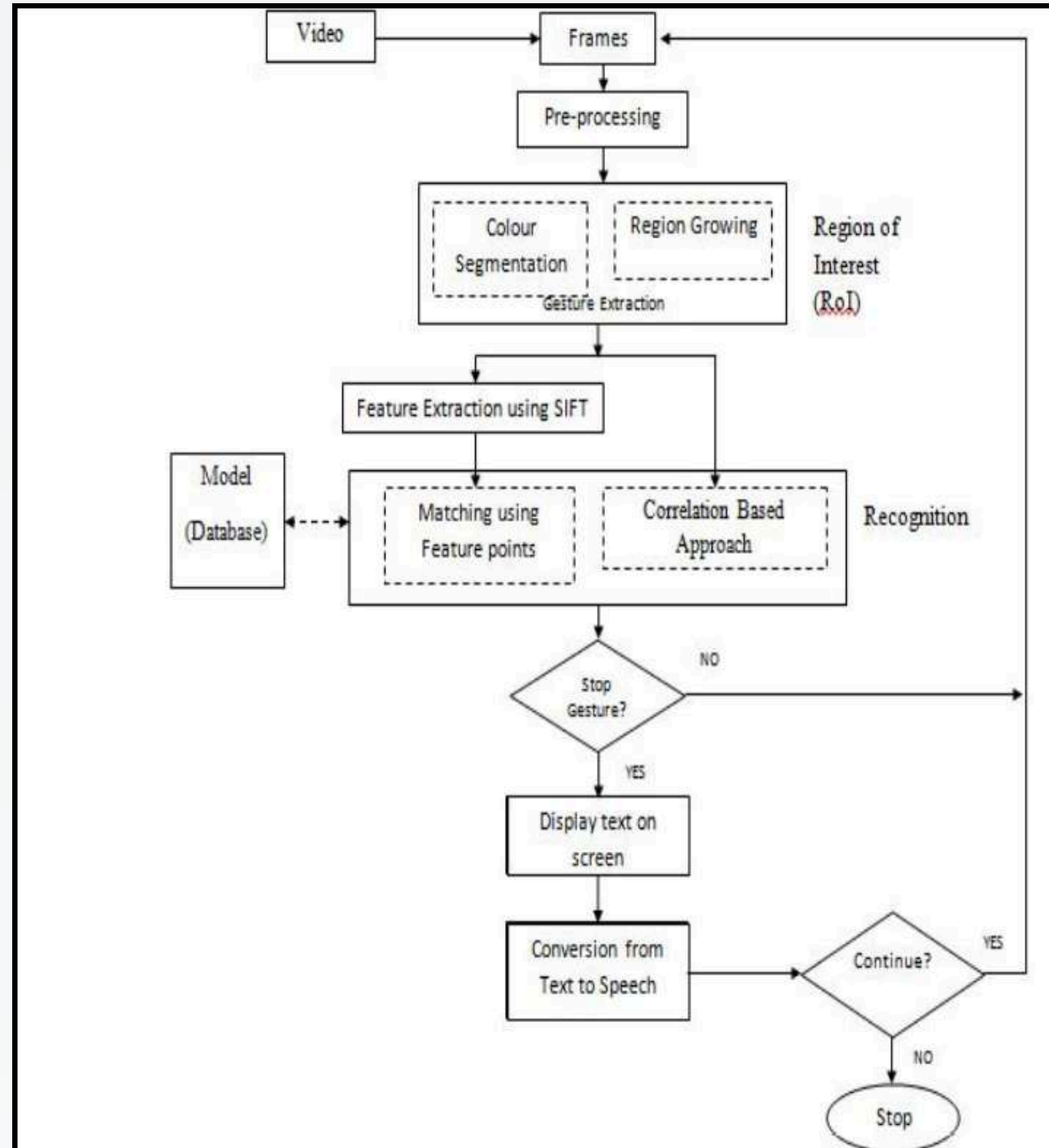
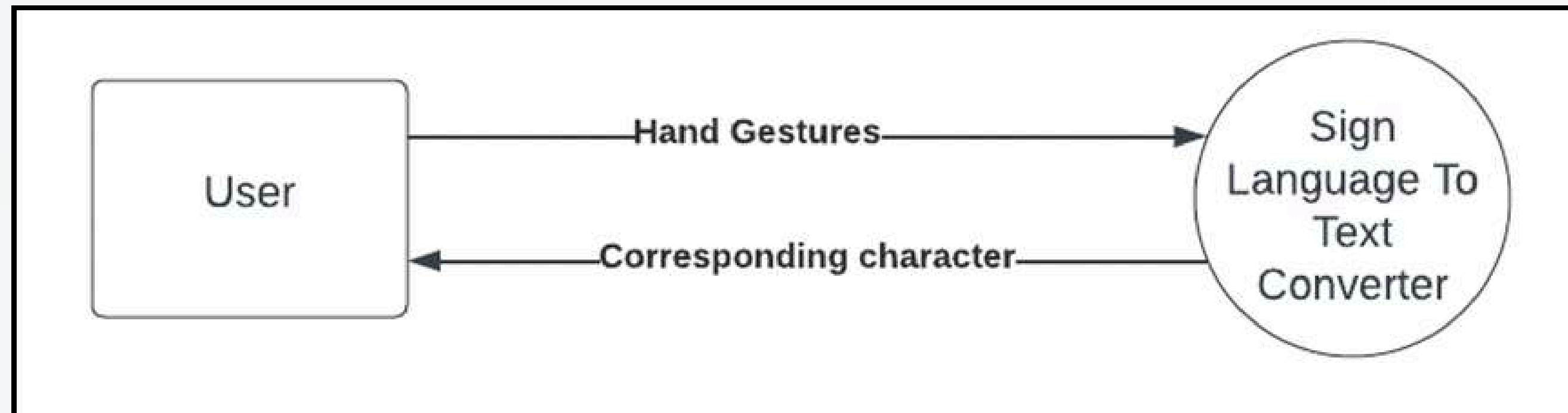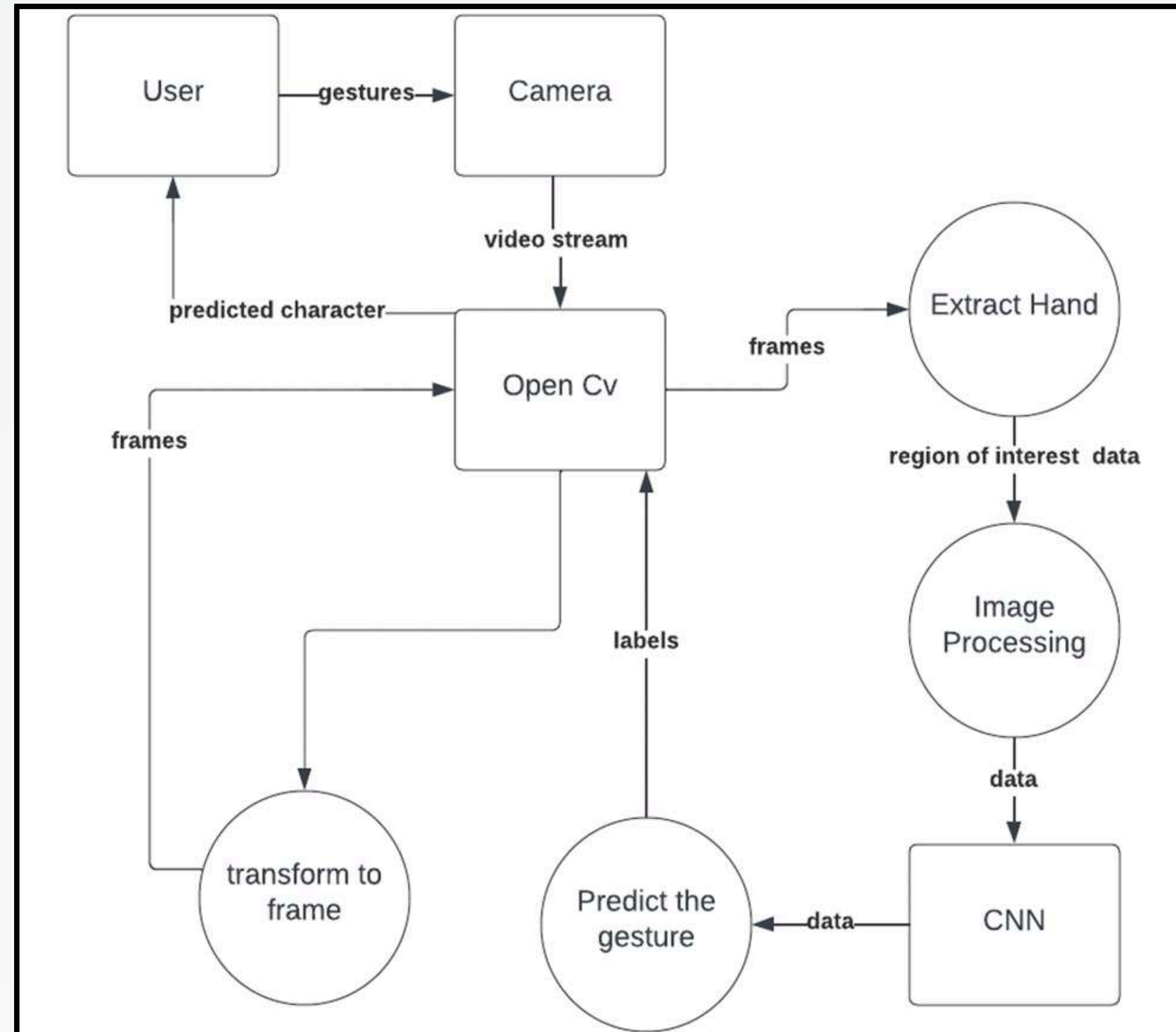# AMERICAN SIGN LANGUAGE

WORK FLOW DIAGRAM
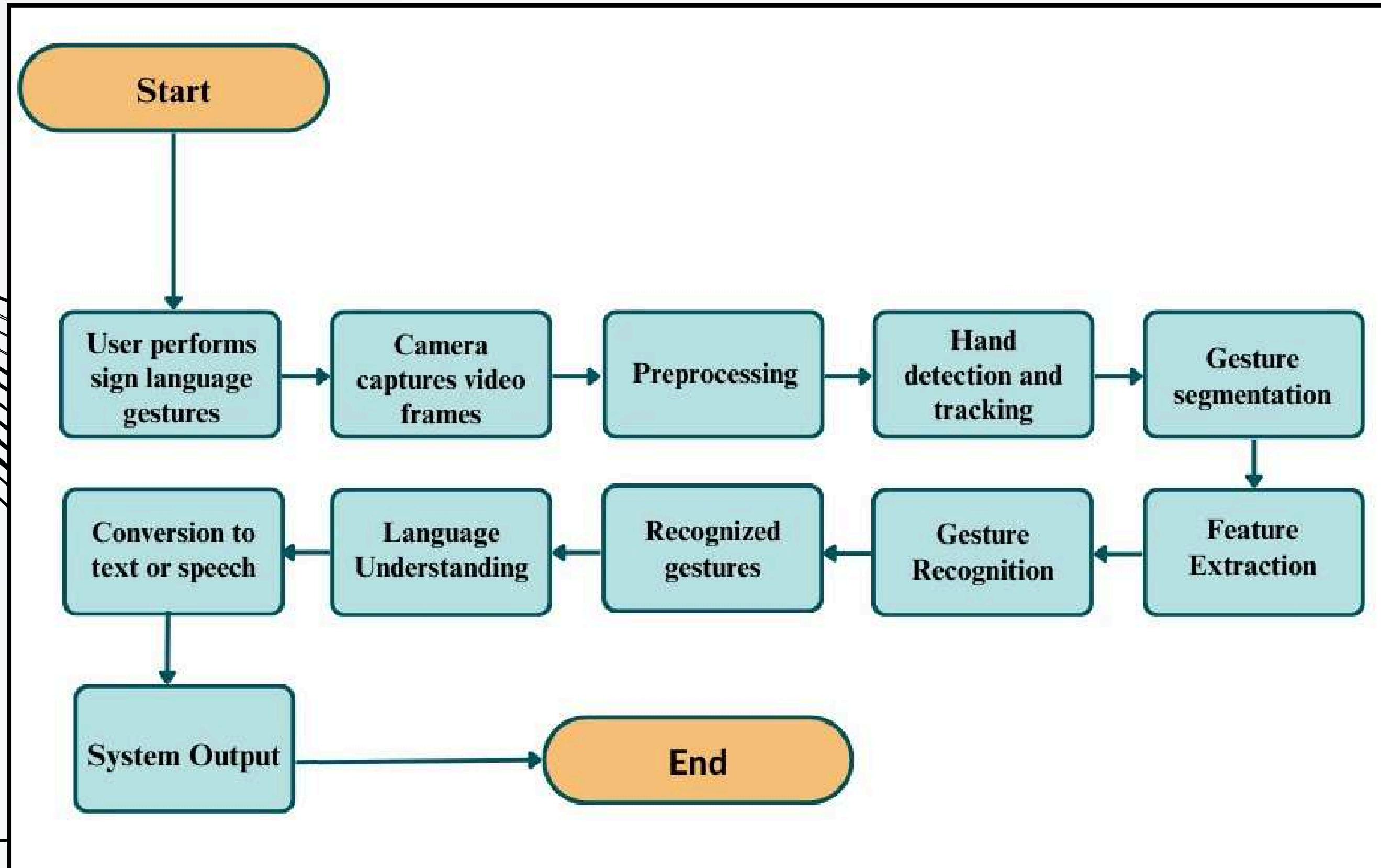
WORK FLOW DIAGRAM
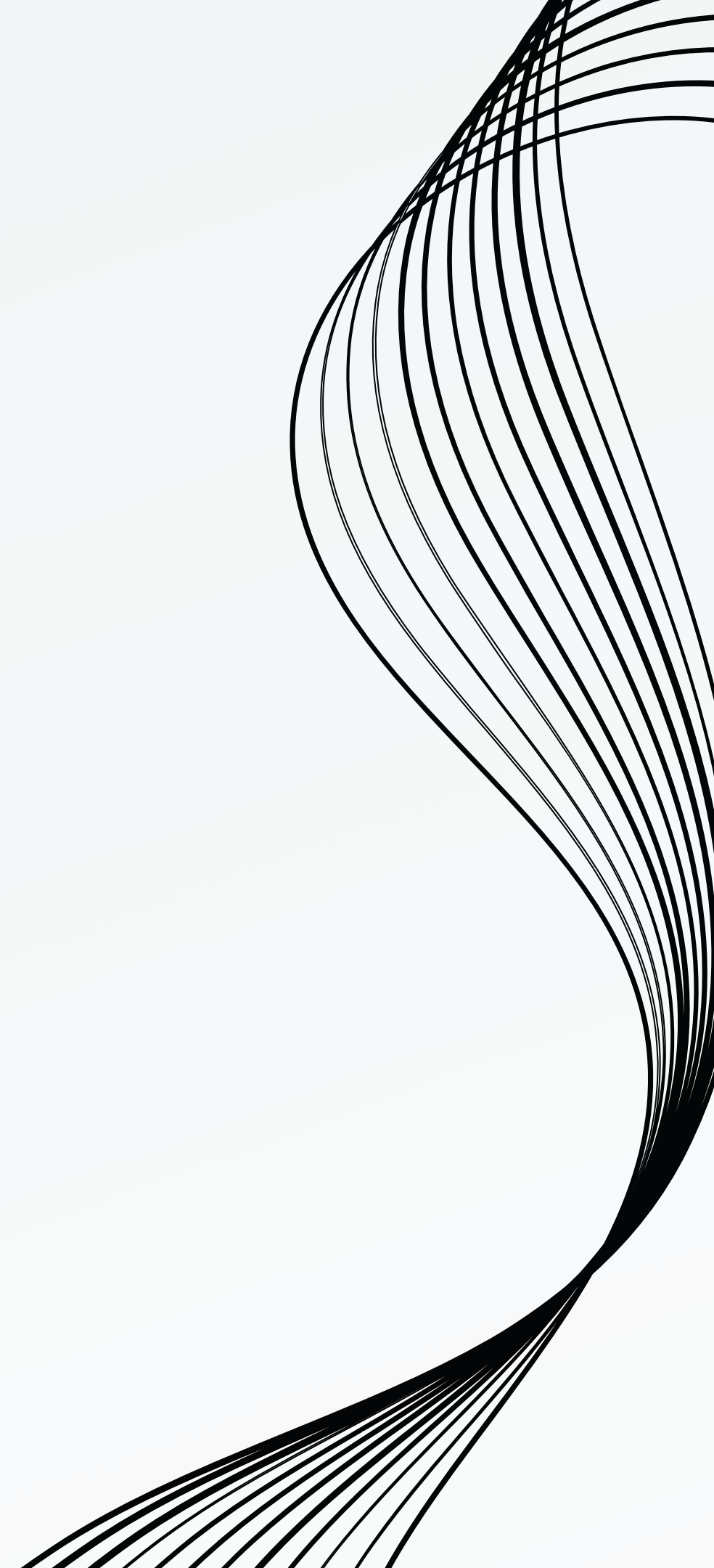
DATA FLOW DIAGRAMS

DFD LEVEL 0

DATA FLOW DIAGRAMS
DFD LEVEL 0

USE CASE DIAGRAM

PATENT STATUS

PROOF OF PUBLICATION:

Patent has been published
Title:- System And Method For Sign
Language Recognition
Application No.: 202411036462
Journal No.: 20/2024
Publication Date: 17/05/2024

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(54) Title of the invention : SYSTEM AND METHOD FOR SIGN LANGUAGE RECOGNITION

(51) International classification	:G09B0021000000, H04R0025000000, G06N0020000000, G06F0003010000, H04N0005247000
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(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
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(71)**Name of Applicant :**
  1)Harsh khatter
    Address of Applicant :54, Narayan Sadan, Anandi Pura, Gurudwara Road, Modinagar ----------- -----------
  2)Vidhi
  3)Vishakha Rana
  4)Sanskriti Bajpai
  5)Raj Kumar
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
  1)Vidhi
Address of Applicant :Department of Computer Science, KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India 201206 ----------- -----------
  2)Vishakha Rana
Address of Applicant :Department of Computer Science, KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India 201206 ----------- -----------
  3)Sanskriti Bajpai
Address of Applicant :Department of Computer Science, KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India 201206 ----------- -----------
  4)Raj Kumar
Address of Applicant :Department of Computer Science, KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India 201206 ----------- -----------
  5)Harsh Khatter
Address of Applicant :Department of Computer Science, KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India 201206 Ghaziabad ----------- -----------

(57) Abstract :
This invention represents the sign language recognition system, which is a technology designed to interpret and understand sign language gestures made by individuals who are deaf or hard of hearing. This system typically involves the use of cameras and machine learning algorithms to translate sign language into text or speech, making communication more accessible for the deaf and hard of hearing community. The description of the work in discussed in the disclosure and figures.

No. of Pages : 28 No. of Claims : 4

RESEARCH PAPER STATUS

PROOF OF ACCEPTANCE:

Research paper has been accepted in the ICCCNet 2024

Conference details:

4th International Conference on Computing and Communication Networks(ICCCNet-2024)

Springer LNNS Approved Conference (Indexed in Scopus, EI, WoS and Many More)

Conference Link: https://icccn.co.uk/

Hyperlink of Paper:
https://1drv.ms/w/s!AiAjZfcuCwFGgVDVdI2k8Jt oiSWg

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International Conference on Computing and Communication Networks 2024: ICCCNet 2024

Dear **Author(s),**

Greetings from **ICCCNet 2024!**

ICCCNet-2024 team is pleased to inform you that your paper with submission ID **328** and Paper Title **'Elevating Inclusiveness: Sign Language Recognition for Deaf, Hard of Hearing, and Mute Individuals'** has been accepted for presentation at "ICCCNet2024" and for publication in the conference proceedings. The Committee thanks you for your contribution.

The conference proceedings will be published by Springer in Lecture Notes in Networks and Systems series [Indexing: SCOPUS, INSPEC, WTI Frankfurt eG, zbMATH, SCImago; All books published in the series are submitted for consideration in Web of Science]. This acceptance means that your paper is among the top 15% of the papers received/reviewed. The registrations for the conference are open. **Register as soon as possible in the Early Bird Category as limited slots are left for publication in Springer LNNS.**

You are requested to do the registration as soon as possible and submit the following documents to icccn.congress@gmail.com at the earliest.
1. Final Camera-Ready Copy (CRC) as per the springer format. (See https://icccn.co.uk/Downloads)

PROJECT STATUS

Project is 100% completed
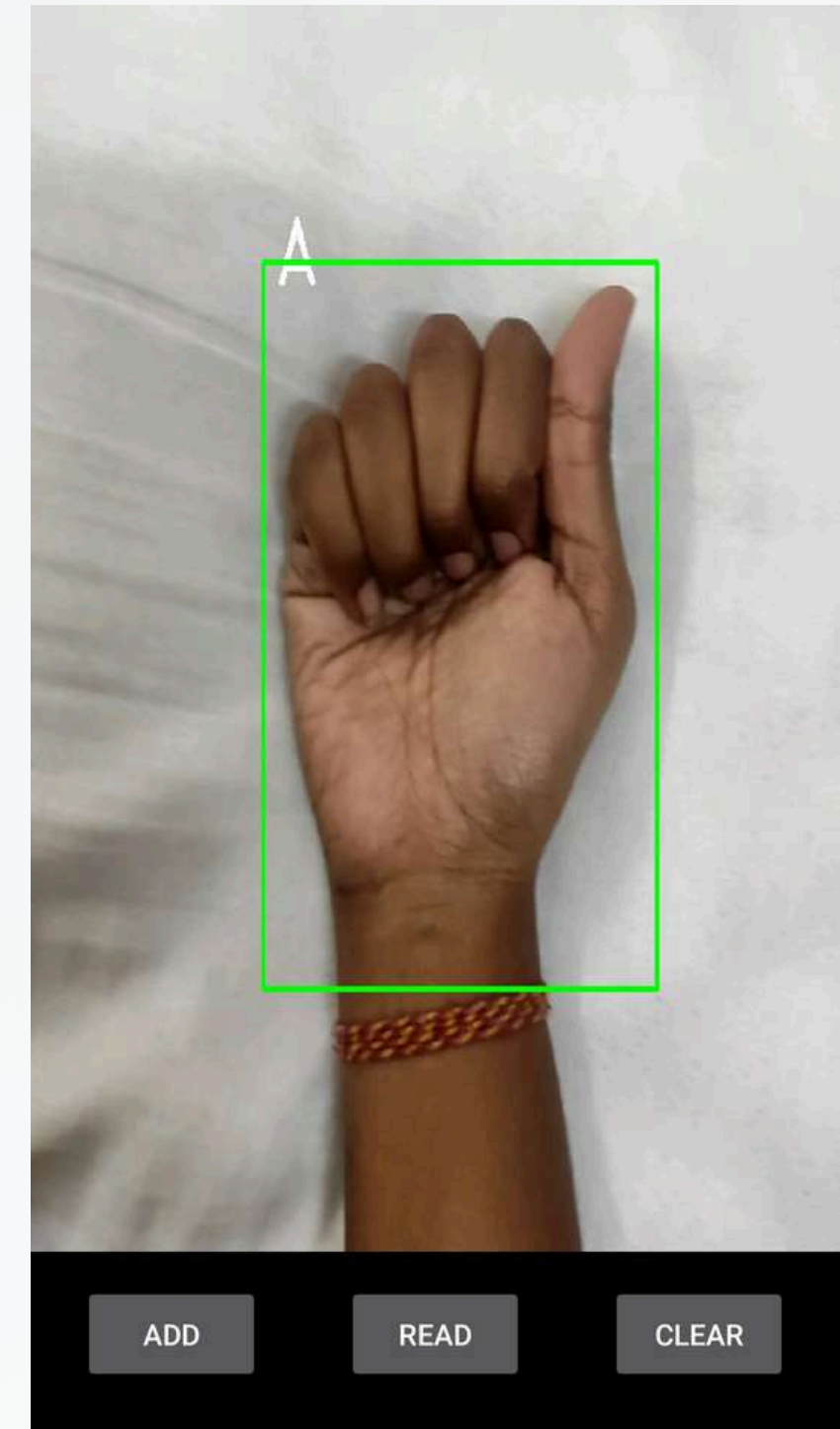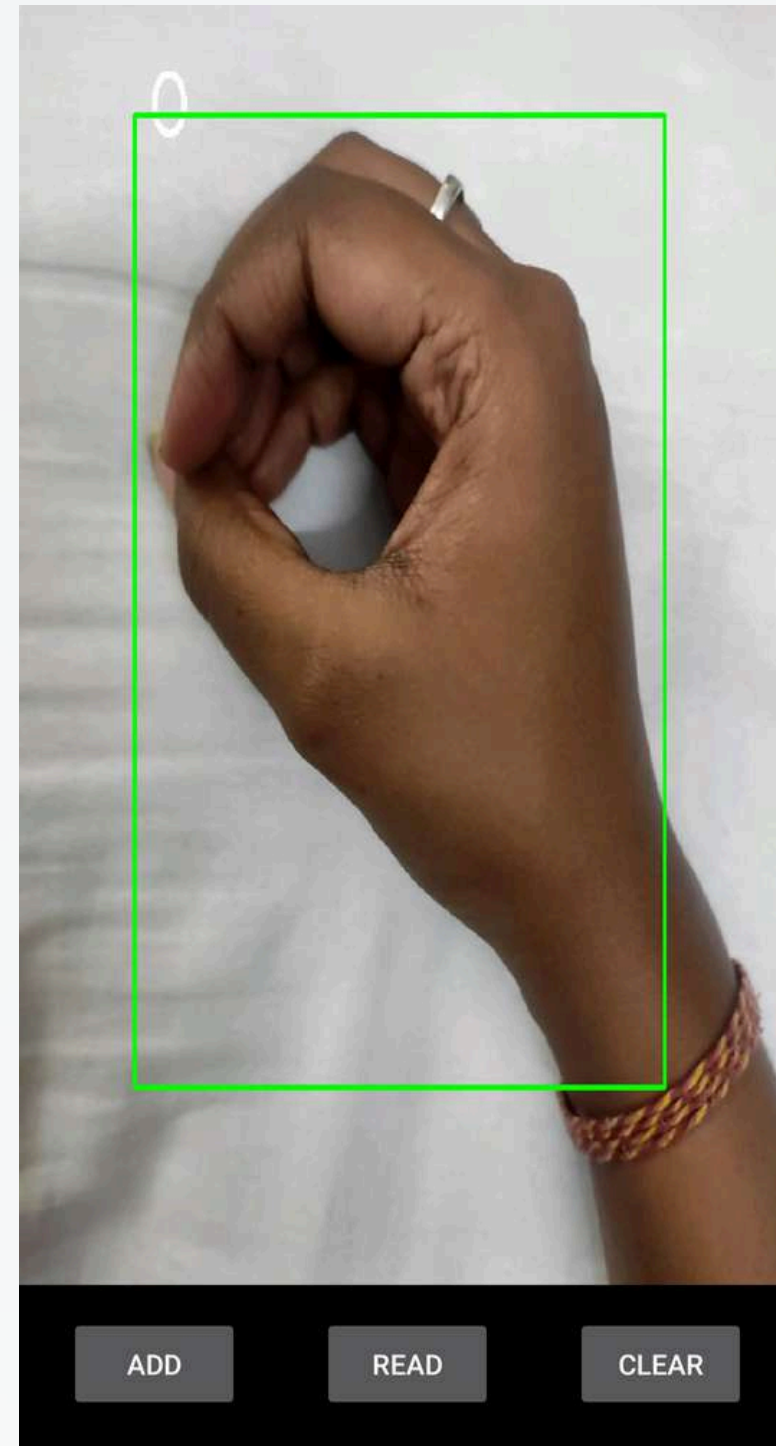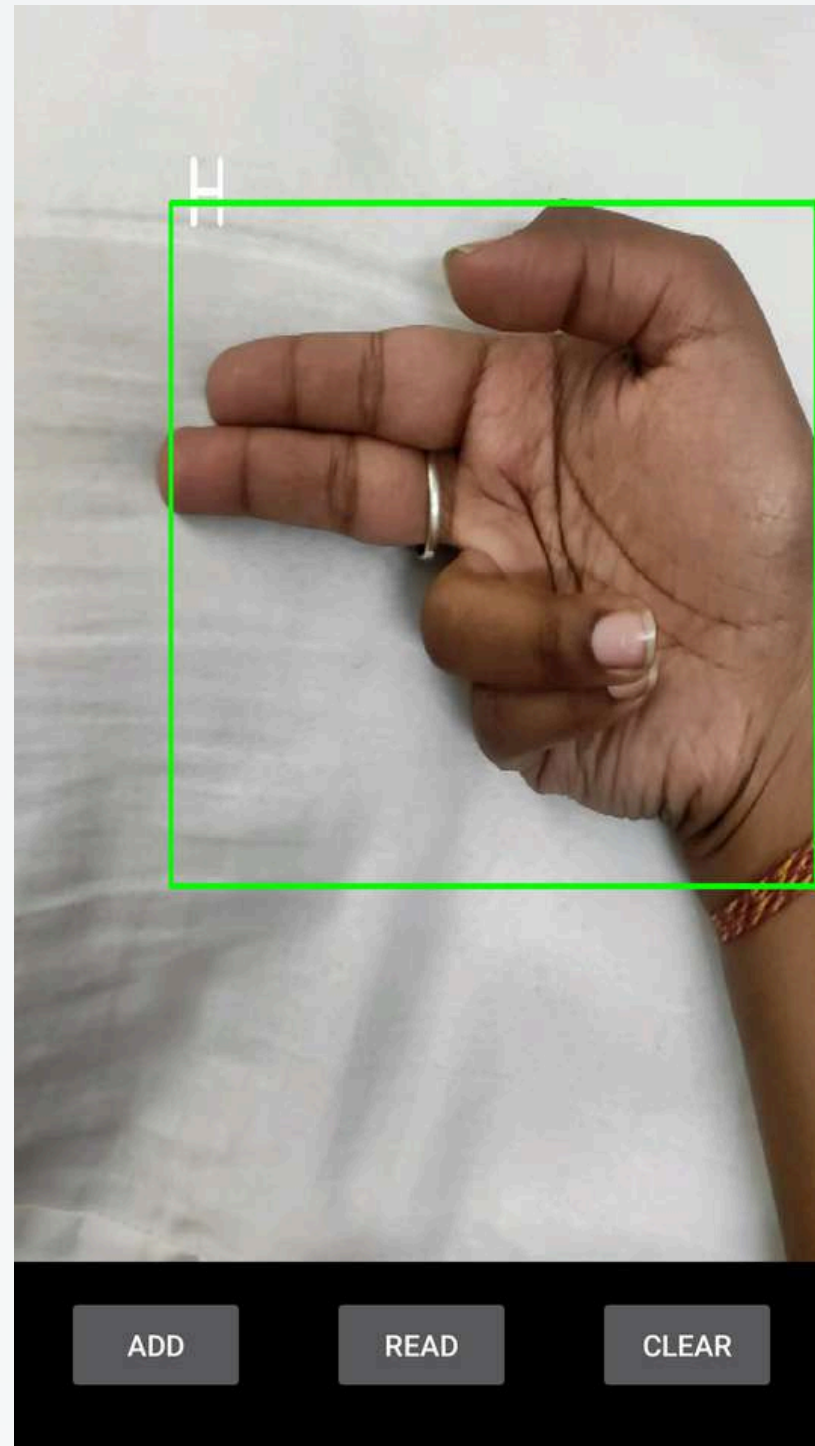
PROOF FOR ALL DOCUMENTS

Hyperlink for Testing Report:
https://docs.google.com/document/d/1bXzt_ppmtMlkXMj62ogj
o28gwr-HfijpKpURtN23FJQ/edit?usp=sharing

Hyperlink for SRS:
https://docs.google.com/document/d/12klqCdZQlsBS9j1cnh8s2d2Wd
xOerunailGI-QAwuLo/edit?usp=sharing

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Hyperlink for Report
https://1drv.ms/w/s!AiAjZfcuCwFGgVDVdl2k8JtoiSWg

REFERENCES

1.HTTPS://WWW.IJERT.ORG/A-REVIEW-PAPER-ON-SIGN-LANGUAGE-RECOGNITION-FOR-THE-DEAF-AND-DUMB

2.HTTP://VISION.STANFORD.EDU/TEACHING/CS231A_AUTUMN1213_INTERNAL/PROJECT/FINAL/WRITEUP/DISTRIBUTABLE/CHEN_PAPER.PDF

3.HTTPS://RESEARCH.IJAIS.ORG/ICWAC/NUMBER2/ICWAC1320.PDF

4.HTTPS://IJRPR.COM/UPLOADS/V2ISSUE9/IJRPR1329.PDF

5.HTTPS://WWW.RESEARCHGATE.NET/PUBLICATION/262187093_SIGN_LANGUAGE_RECOGNITION_STATE_OF_THE_AR

6.HTTPS://SCI-HUB.SE/HTTPS://IEEEXPLORE.IEEE.ORG/DOCUMENT/7267912.

7.HTTPS://WWW.RESEARCHGATE.NET/PUBLICATION/337990440_SIGN_LANGUAGE_RECOGNITION_SYSTEMS_A_DECADE_SYSTEMATIC_LITERATURE_REVIEW

8.HTTPS://WWW.IRJET.NET/ARCHIVES/V7/I3/IRJET-V7I3418.PDF