23/12/21

SIGN LANGUAGE DETECTION

Abstract

Sign language detection and recognition is a breakthrough for helping deaf-mute people and has been researched for many years.

In this project, a sign language detector is created which detects number and hand gestures including the alphabets.

This is divided into:

(1) Creating the dataset
(2) Training a CNN on the captured dataset.

3. Predicting the data.

21/12/21

Dataset

A dataset is a collection of data. In case of tabular data, a dataset corresponds to one or more database tables, where every column of a table corresponds to a particular variable and each row corresponds to a given record of the dataset.

Tensor flow

Tensor flow is an end-to-end source platform for machine learning. It has a comprehensive, flexible ecosystem of tools, libraries and community resources that lets researchers push the state of the art in ML and

developers easily build and deploy ML powered applications.

Opencv

Opencv is a huge open-source library for computer vision, machine learning, and image processing. It can process images and videos to identify objects, faces or even the handwriting of a human.

Implementation

This program recognizes Indian Sign language gestures taken from static pictures.

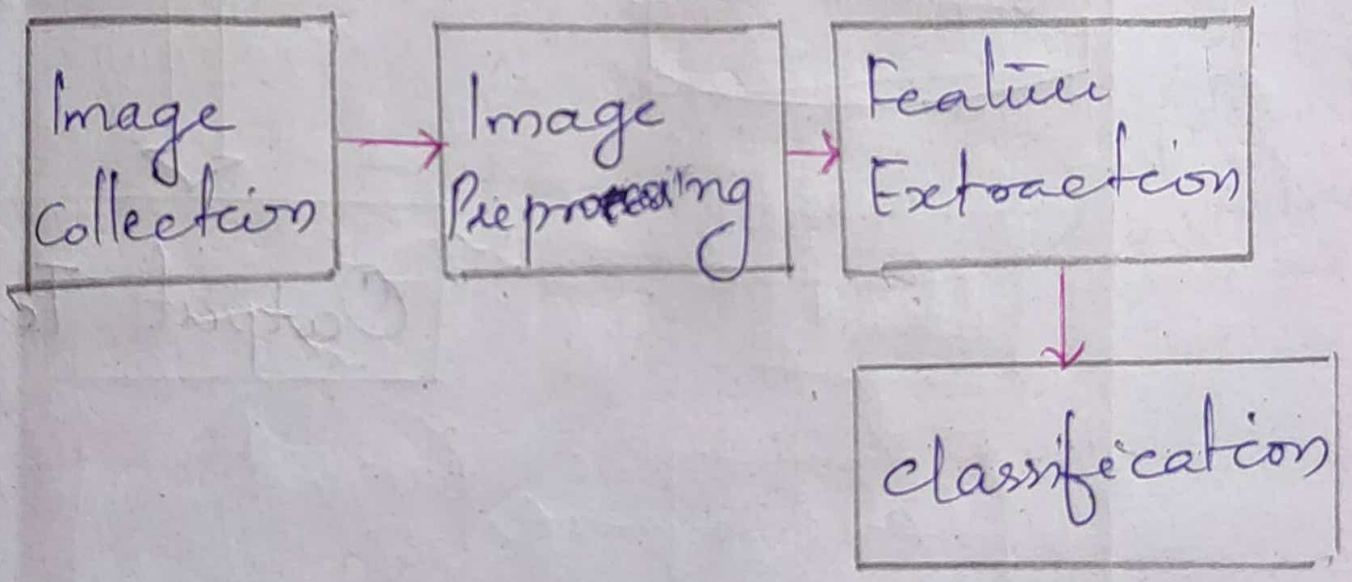
Several steps involved are :

→ Image collection

→ Image preprocessing

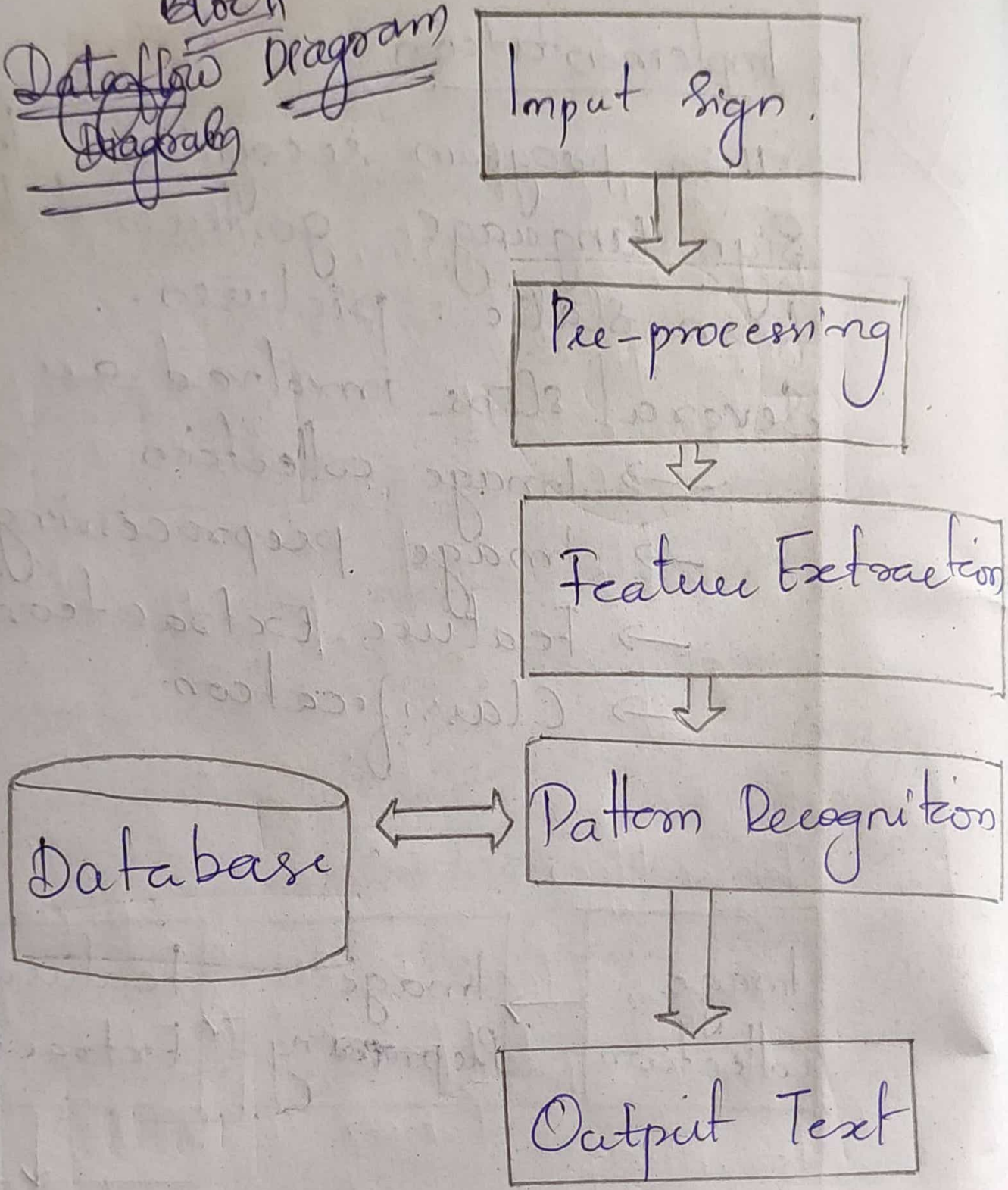
→ Feature Extraction

→ Classification

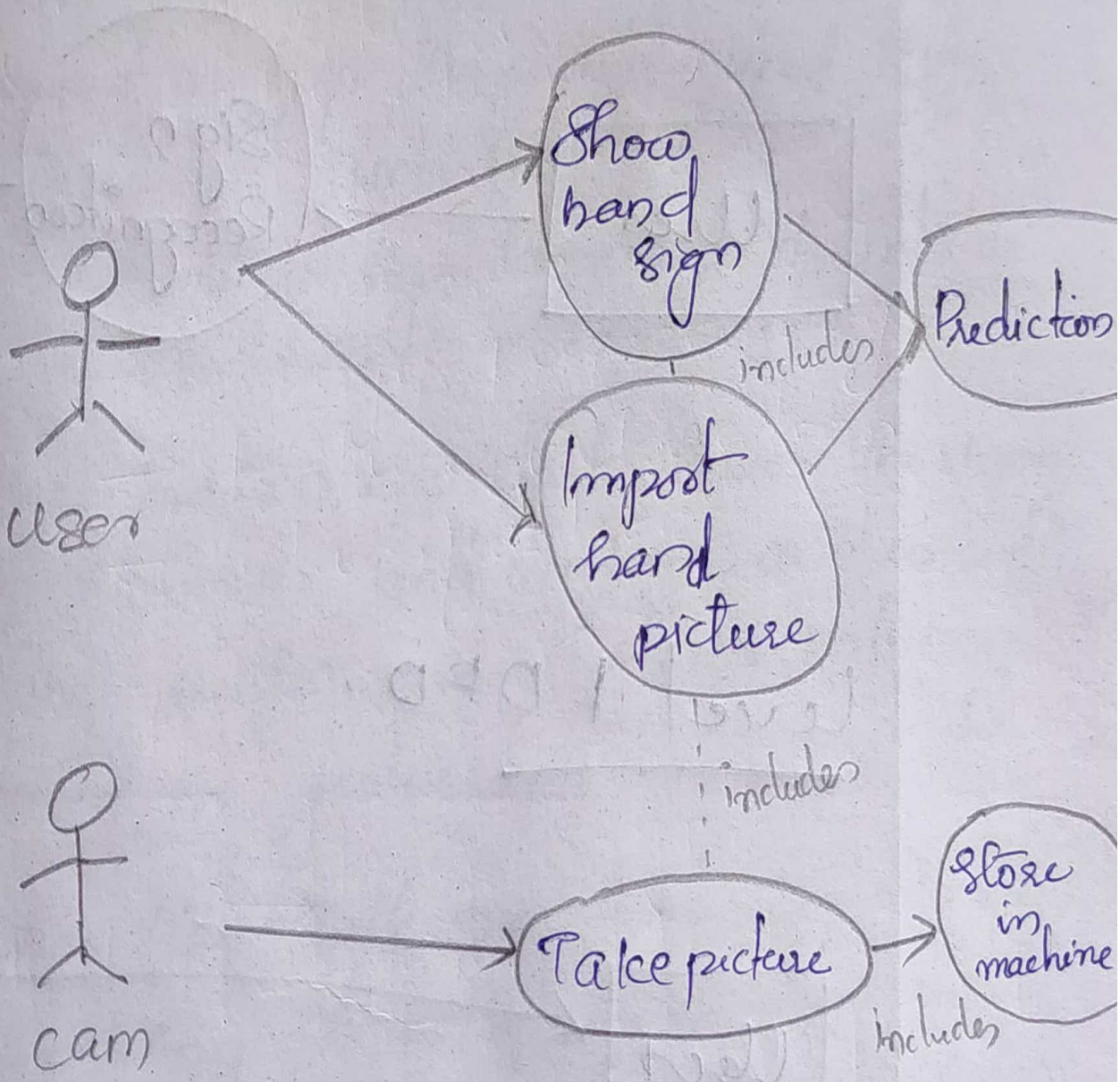


Block Diagram

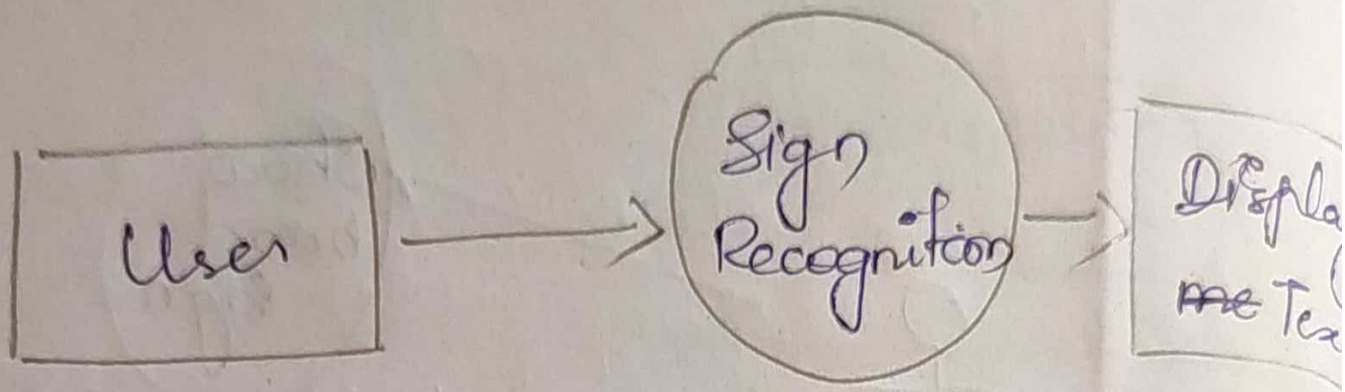
Dataflow Diagram



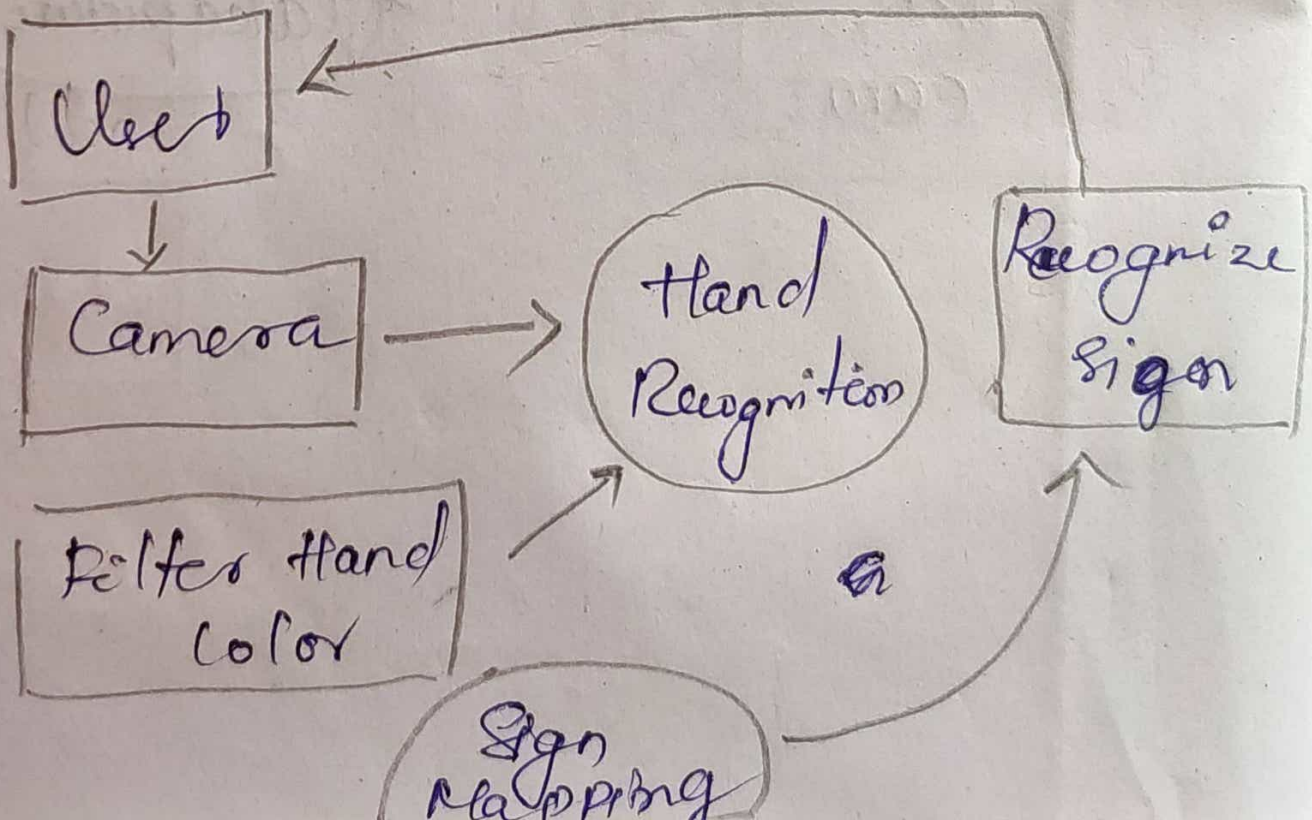
Use Case Diagram



Level 0 DFD.



Level 1 DFD.



Existing System

* There exists some applications based on sign language and its detections such as:
  - Indian sign language translator
  - HandTalk.
* The Indian app just shows the signs of alphabets and numbers and converts into audio and it shows nothing based on gestures.
* The HandTalk app works by either speaking directly into it or manually typing in the words. It then displays an on-screen avatar who translates the words into sign language.