1.Preliminary design of the project :

The project **ISL(Indian sign language) recognition** is divided mainly into four stages:

1.1 *Selection of Symbols :*
First of all, we choose 83 symbols according to the ISL. The word we choose is used in daily life. The list of symbols we have selected for this project are listed in the below docs link.
Link-https://docs.google.com/document/d/1hOa80f_Vfl4ukaVDBfETfqPw7ZnnNqGi1mSjZQ3ILx4/edit?usp=sharing

1.2 *Collection of data set:*
Secondly, we have to collect a raw data set of about 5000 images for the selected 83 signs of the indian sign language on our own i.e. about 60 images for all the symbols we have chosen.

1.3 *Data processing :*
A python script will be made which will contain some functions to load the raw image data set and save this image data as NumPy arrays into the file storage system. Now, these arrays will be used to train the model.
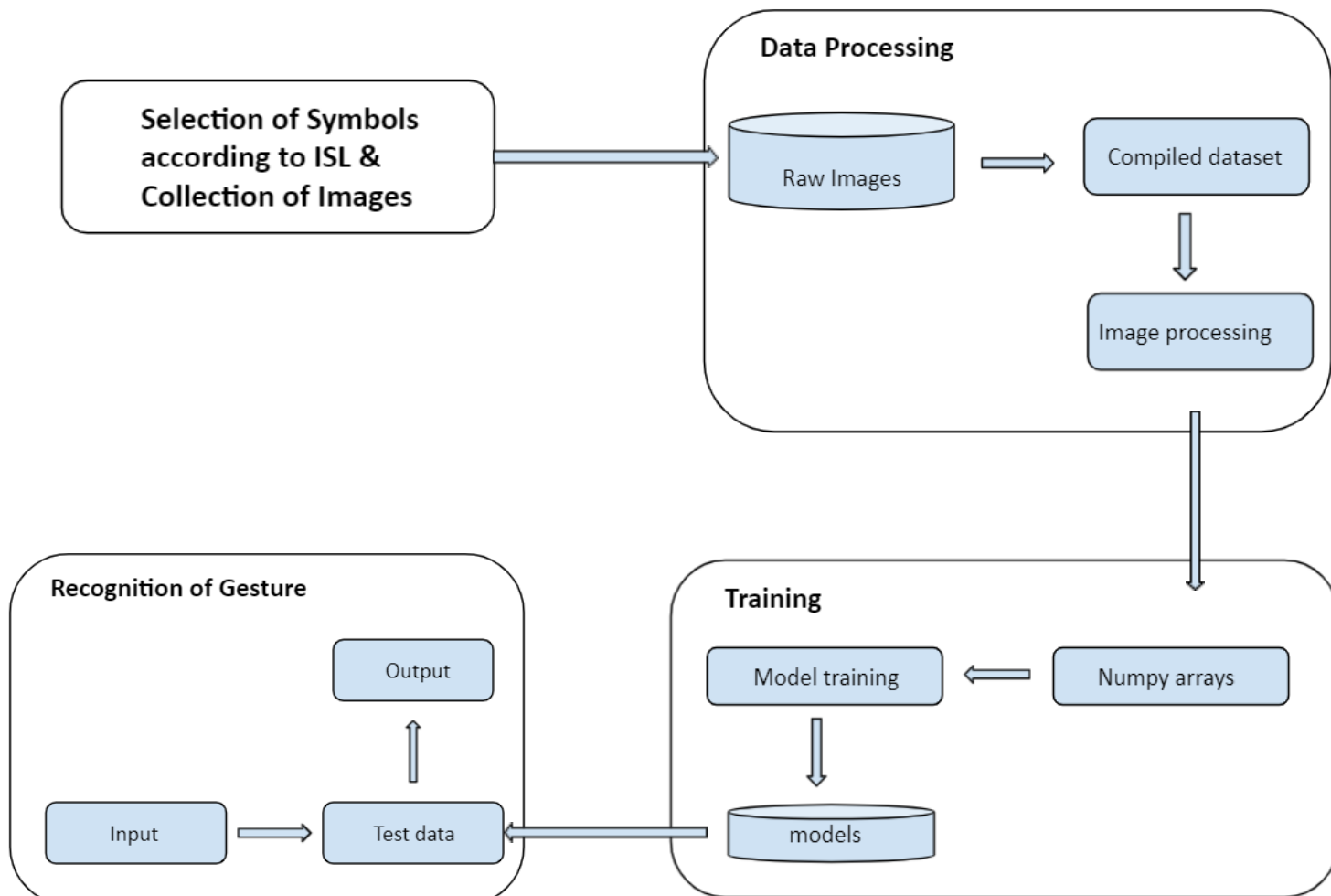
1.4 *Training:*
Training of the model will use the parameters obtained from a file that will list the learning rate , image filtering , batch size and number of epochs. The model will be tested every epoch and the model with best accuracy is saved for further testing. On finishing the training , the error and loss will be saved.

1.5 *Recognition of gesture:*
After training the model , it can be used to identify the gestures of the Indian sign language on which it was trained.

Below is the overview block diagram of all the steps of our project.

2.List of items required for the project:

    I. USB drive (128 GB)
   II. PC with good processor (at least intel 7th generation) should be allotted
  III. Camera (we will use phone camera)
  IV. OTG cable

3.List of equipments required for testing:

    I. Web camera
   II. PC or laptop

4.Simulation :

The simulation for this project at this initial stage is not possible for us to make on our own. Below is the reference youtube link for this:

▶ Indian Sign Language recognition (ISL) for deaf and dumb people with python using Bag of words

5.Unprecedented Budget:

    I. USB drive (128 GB) - Rs. 2400(approx)
   II. Web camera - Rs. 3000(approx)
  III. OTG cable - Rs. 200 (approx)

→ Total Budget - Rs. 5600(approx)