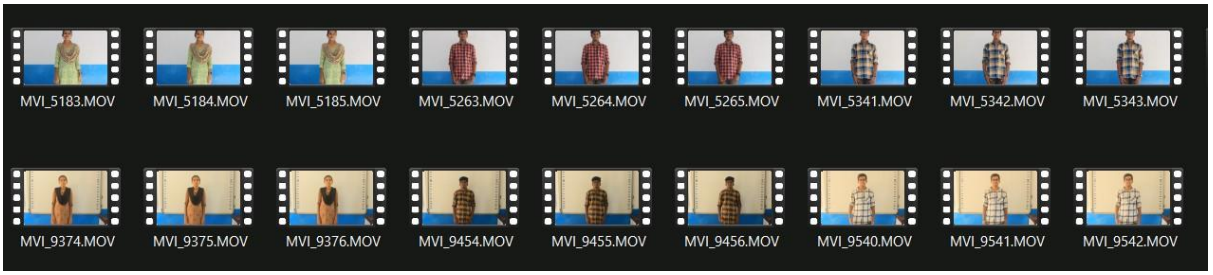
Indian Sign Language Detector

1. DataSet :

So let's talk about data -
It is a video's dataset of indian sign language. And there are 790 videos.



There are 59 classes in our dataset ;
alive , bad,Beautiful, big large, Blind, cheap, clean, cold, cool, curved
Dead, Deaf, deep, ……., wet, wide, young.

2. Data Augmentation:

Data augmentation artificially creates new training examples from existing data by applying simple transformations, helping machine learning models learn better from limited datasets

Now there are 1332 videos after applying data augmentation.

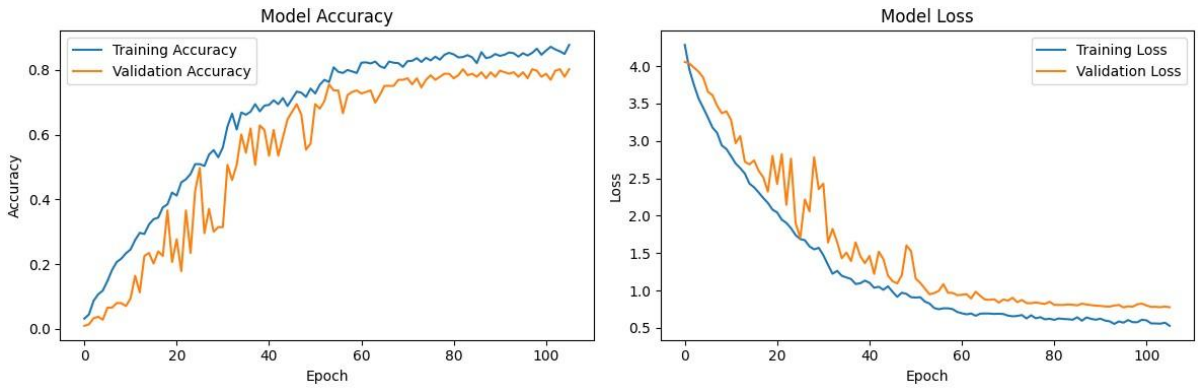
3. Feature Extraction:

Extracted features using **MediaPipe** (MediaPipe is a free and open-source framework created by Google that helps computers understand and analyze videos and images in real-time.) and **OpenCV**. Features are - Pose, Left_Hand, and Right_Hand.

4. **Model Training:**

Trained the model on ***GRU*** algorithm using **TensorFlow** and gained **76.78% accuracy** after trained on ~**120 epochs**.

There were 3 GRU Layers with **128, 64, 64 neuron**s and "**relu"** activation function. And 2 Dense Layer had **128,32 neurons** with "**elu"** activation functions**.**

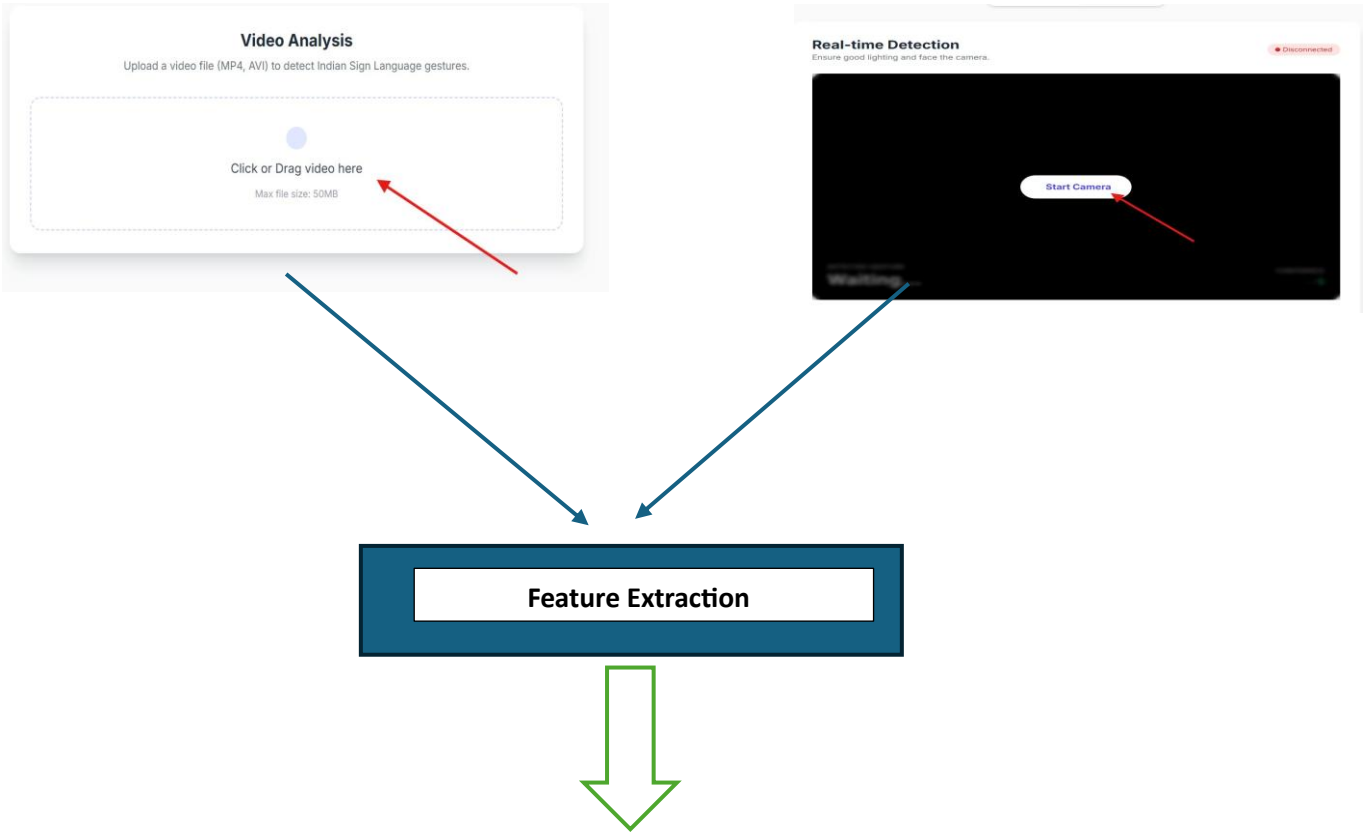


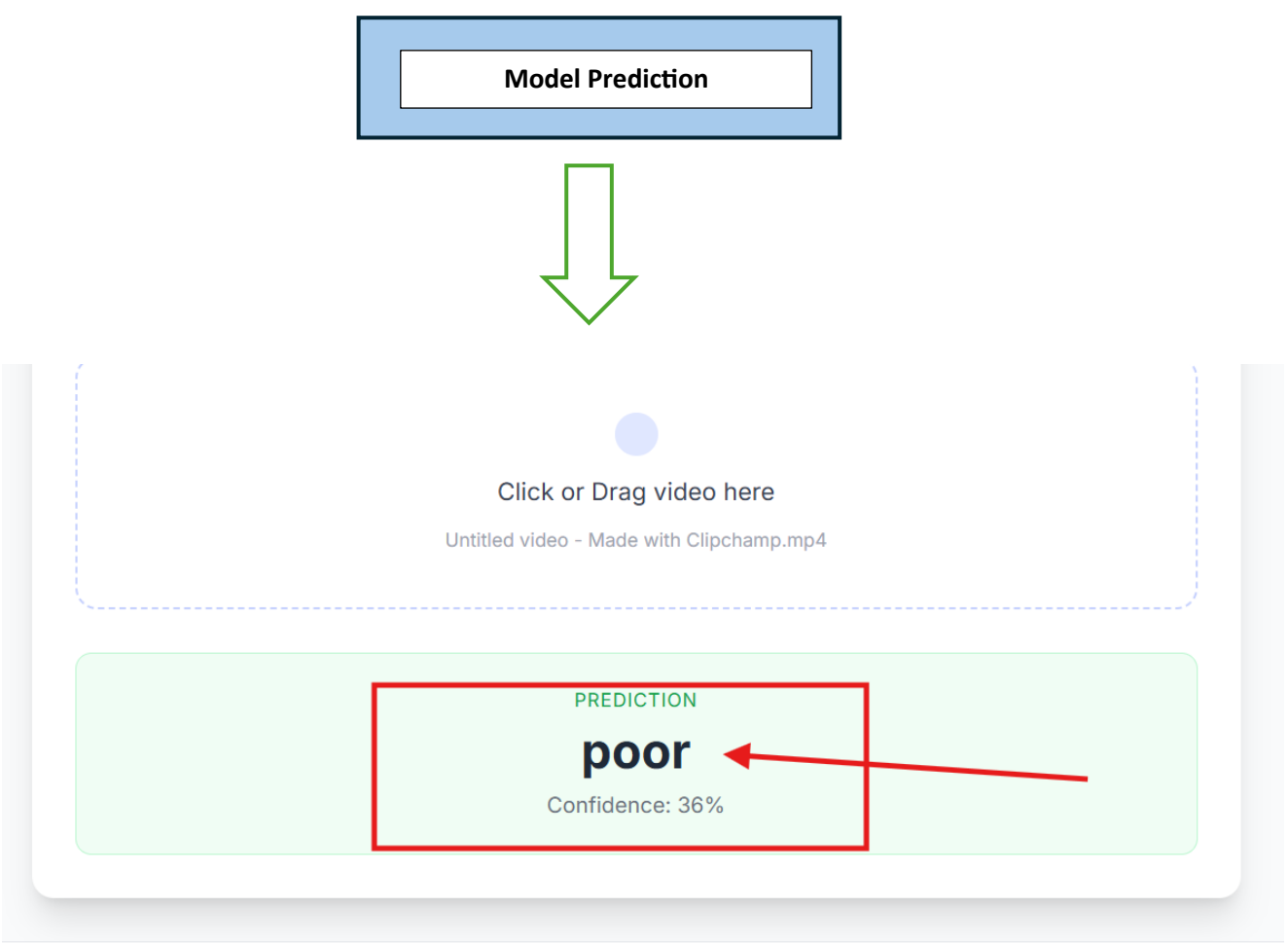
5. **Saved the trained model.**

6. **Deployment:**
   Deployed using FastA(FastAPI is a modern, high-performance Python web framework for building APIs)

Final Working :

We have created an UI so that users can use it easily. It can take video files and also can predict real time video through webcam.




Model Prediction
Click or Drag video here
Untitled video - Made with Clipchamp.mp4
PREDICTION
poor
Confidence: 36%