Real Time Sign Language Detection

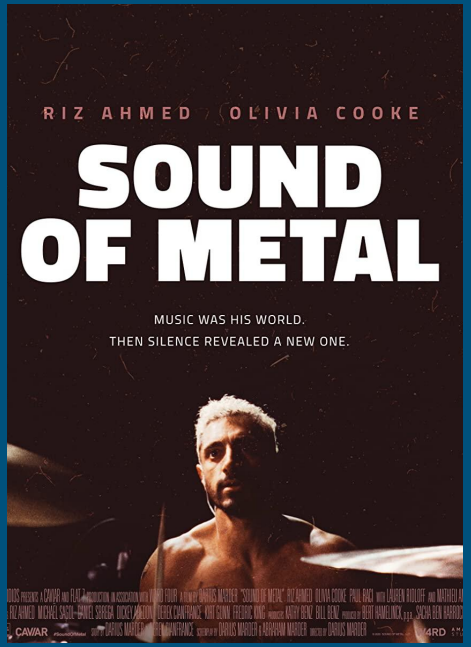
By: Sunny Bhandal

About Me

- University of Calgary, Class of 2020
  - Major: Actuarial Science, Minor: Statistics
- Has a monster serve in spikeball

Project Inspiration

- Personal Experiences
- Films



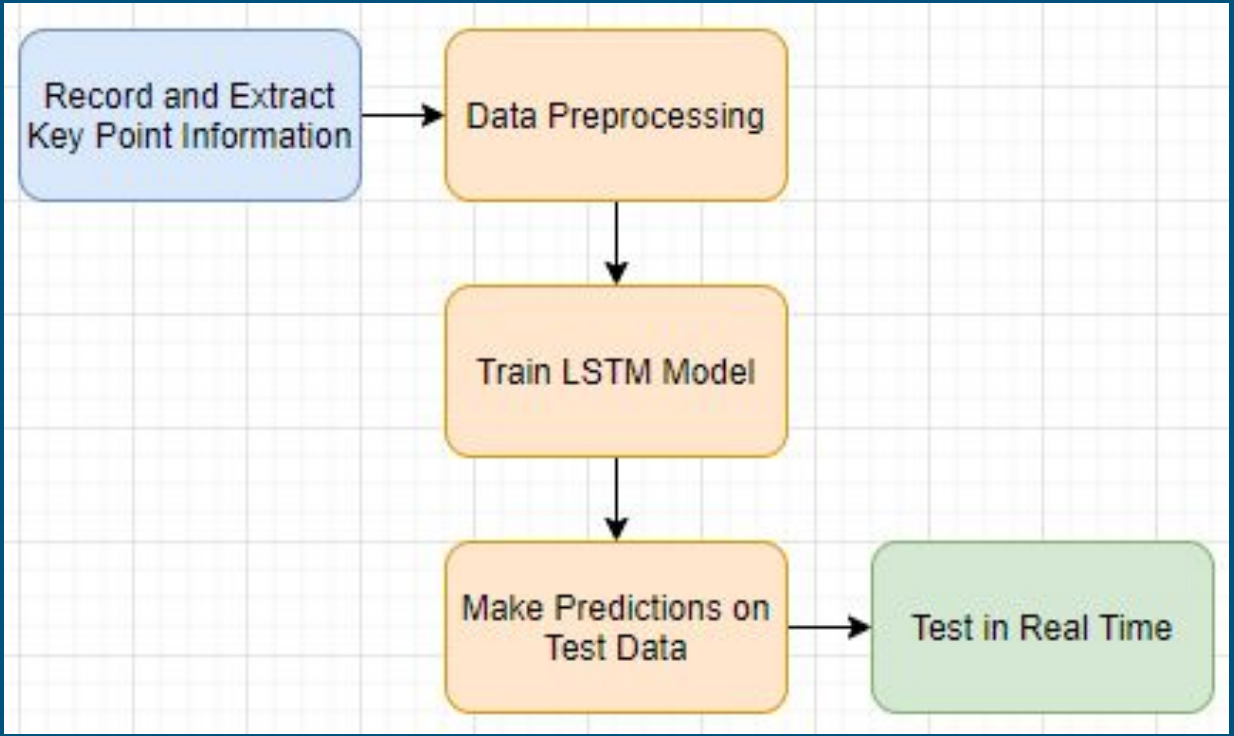
Introduction

Mission: Detect and predict the sign language phrase in real time.

Key Packages

- TensorFlow: Used to train deep learning models
- OpenCV: Computer vision library
- MediaPipe: Detect key points on the body

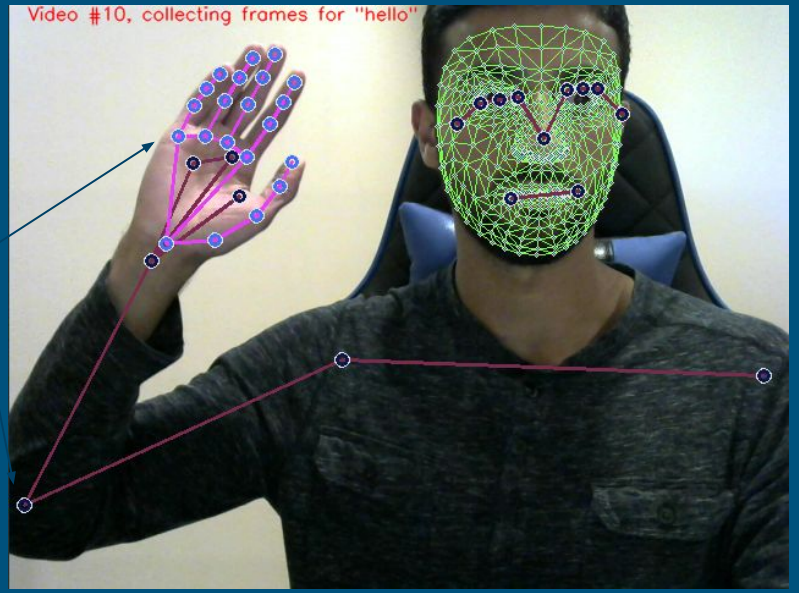
Project Workflow



Data Recording

- Record phrases by performing the actions
- Collect 30 clips of 30 frames for each phrase
  - This means 900 data points collected per phrase

Capture Sequence



Initial Model

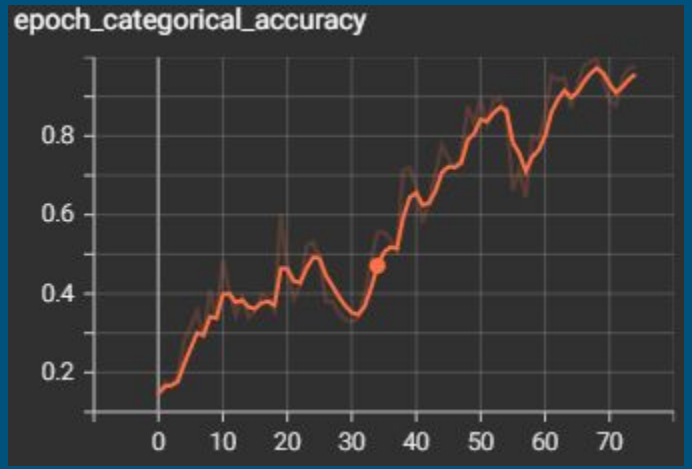
- 70% model accuracy
- Predicting three phrases (hello, I’m, Sunny)
- Text display error (default word “hello”)

Word Display

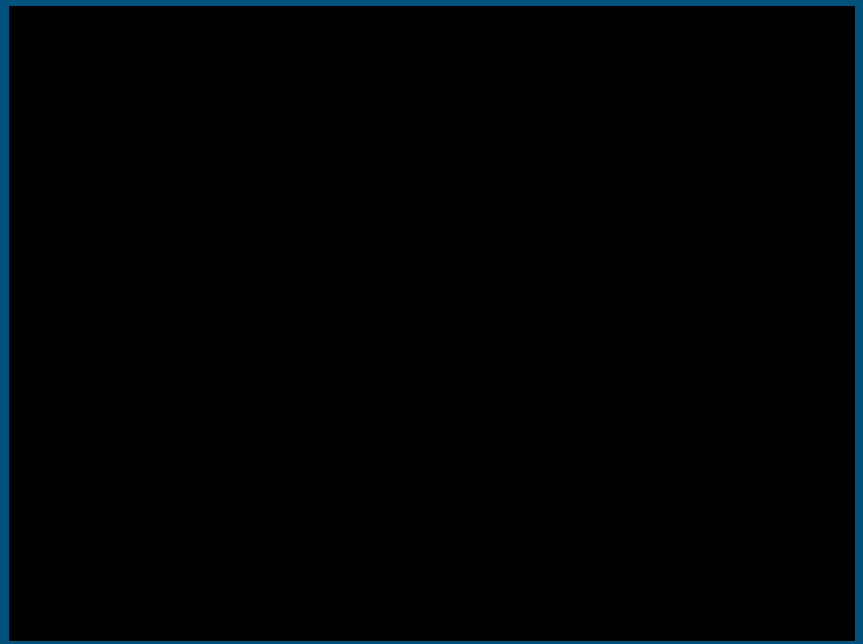
Final Model

- 96% model accuracy
- Predicting six phrases (hello, goodbye, thanks, name, yes, no)
- Display text with a probability threshold of 85% confidence

Model Accuracy



Live Demo



Challenges

- Model Accuracy/Training
- Displaying text without interruptions

Going Forward

- Add more phrases
- Potentially deploy this model to a website for users to practice and learn

Thank You!