ASL Translator

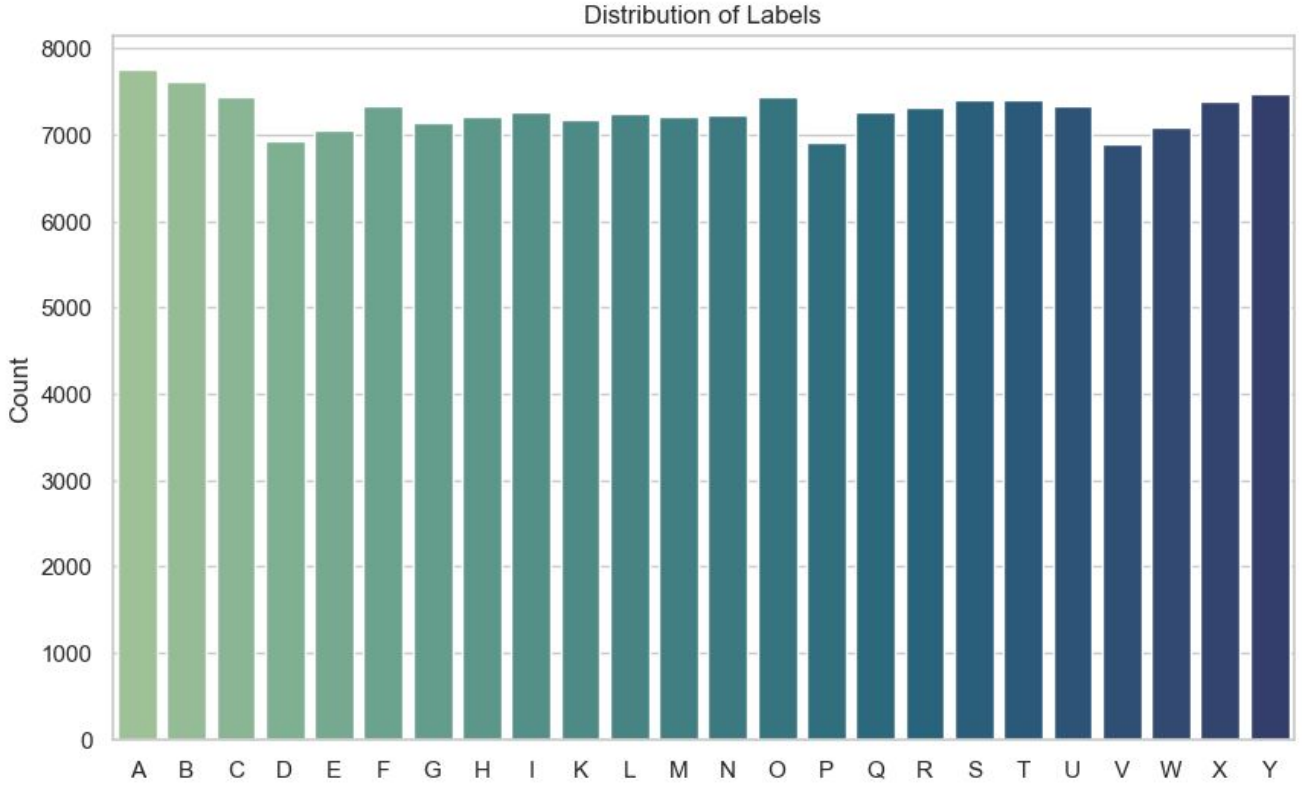
Capstone Project Presentation for General Assembly DSI-1113

Created by Landry Houston

Project Overview

- Provide a simple way for deaf people to be able to communicate with hearing people
- Detect and translate signs in real-time
- Build user-friendly web apps to enhance communication

Data Analysis



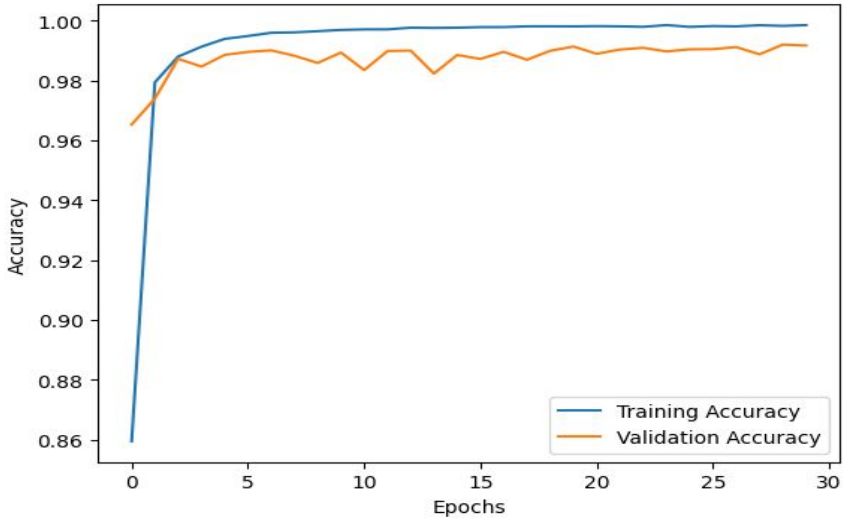
Data Analysis

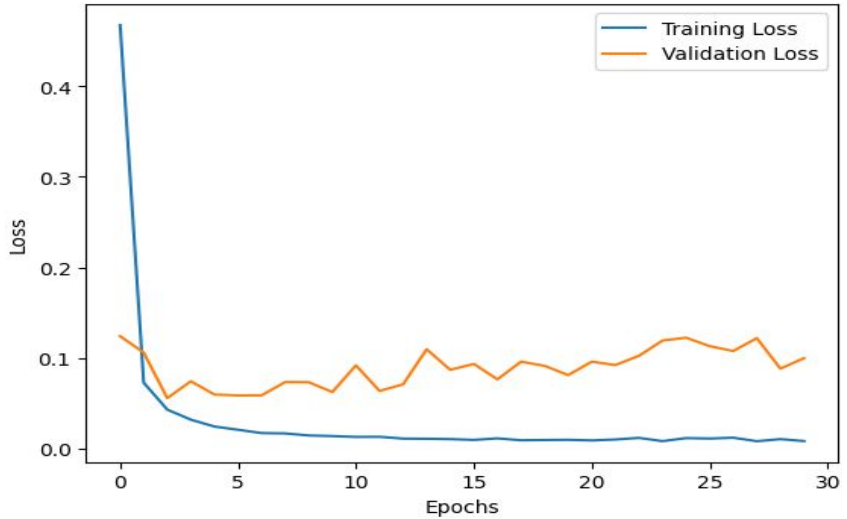
- 174,474 images distributed across 24 classes
- Alphabet excludes J and Z due to being dynamic signs
- Image augmentation was considered unnecessary

Modeling

Created a Keras Sequential model incorporating Convolutional Neural Networks

Train	Test
Acc - 0.9996 Loss - 0.0015	Acc - 0.9919 Loss - 0.0899

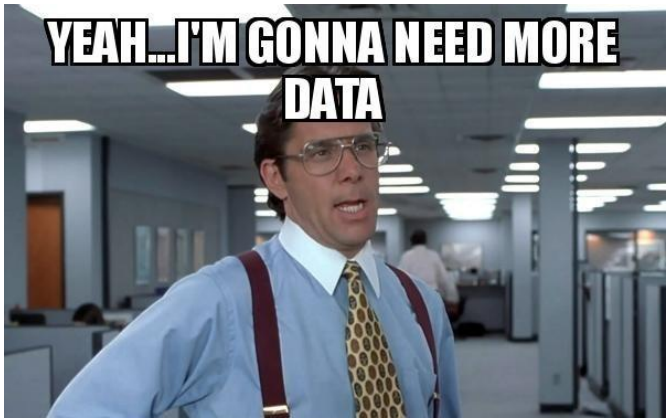




Time for the fun stuff!

Data Collection

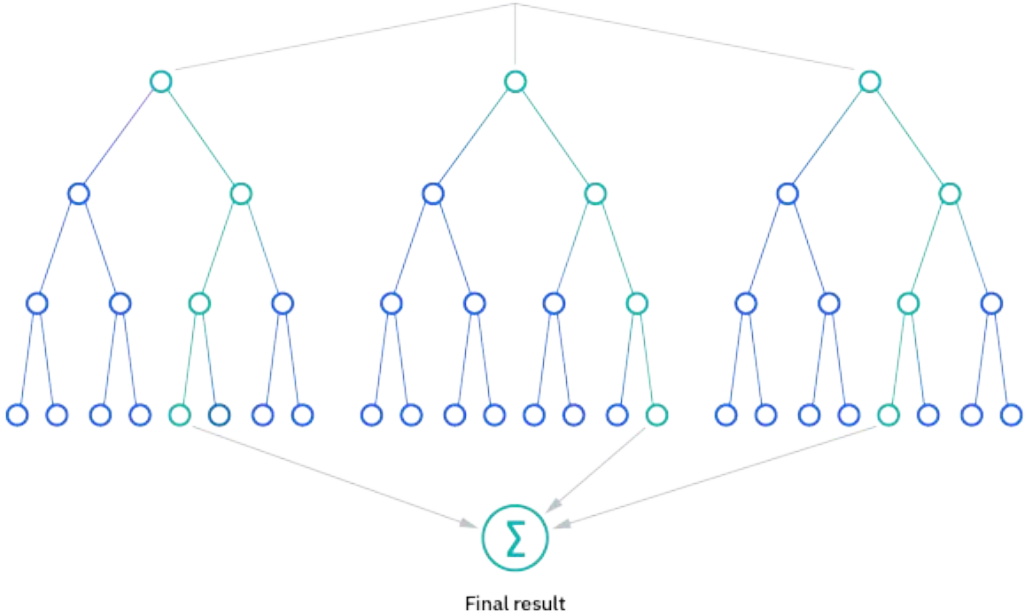
- Collected over 24,000 images
- 1,000 per class (500 per hand)
- 40 images per second



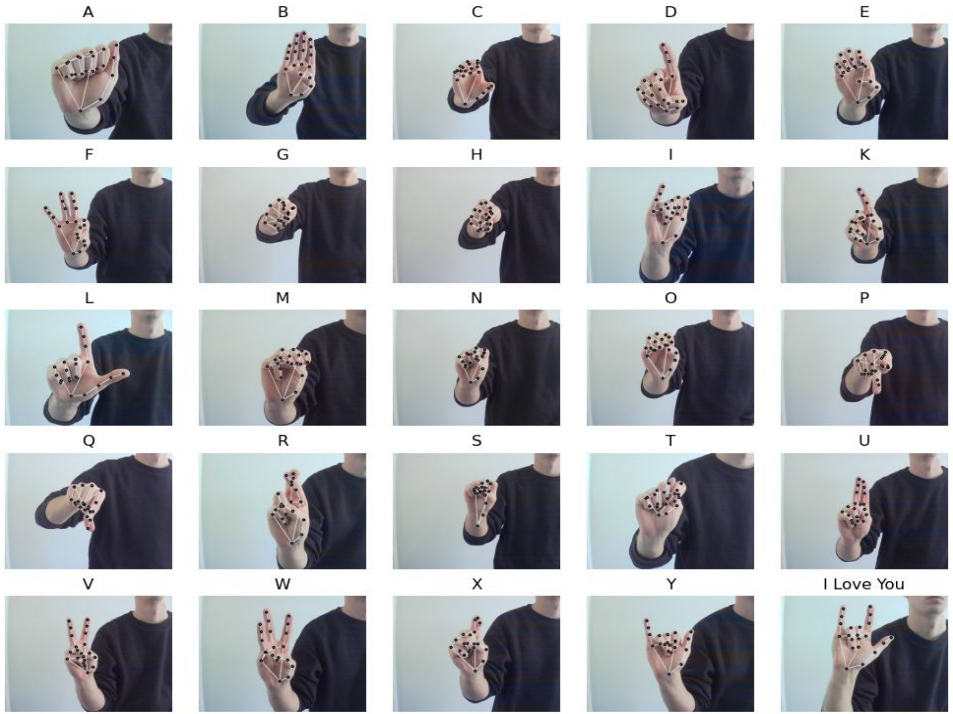
Modeling

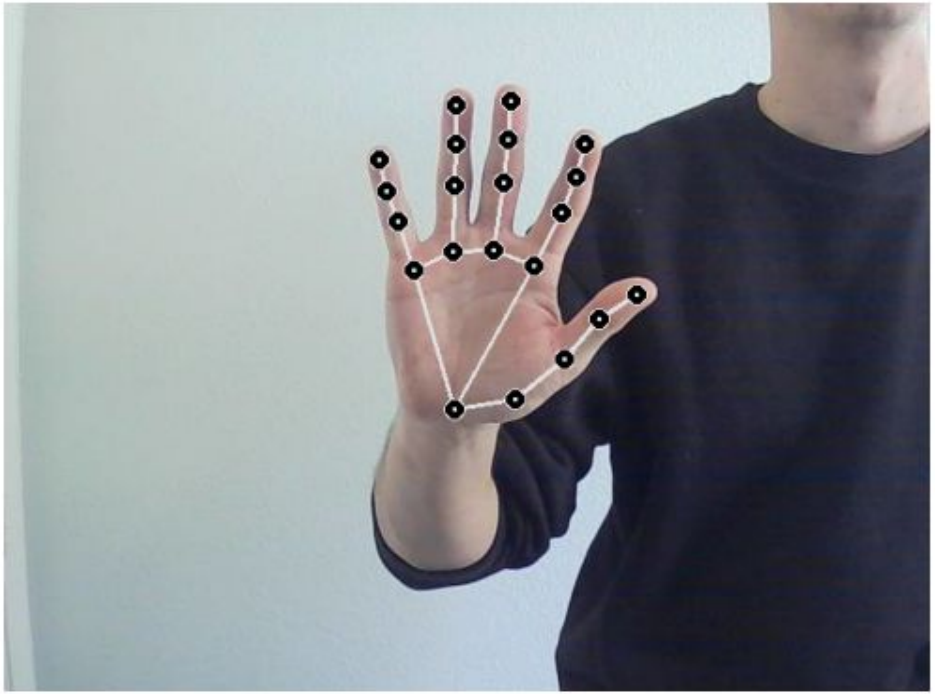
- Quick training time for fast predictions
- Correctly classifies 99.9% of samples

Random Forest Classifier



Hand Landmarks





Web Applications

Streamlit

&

Flask

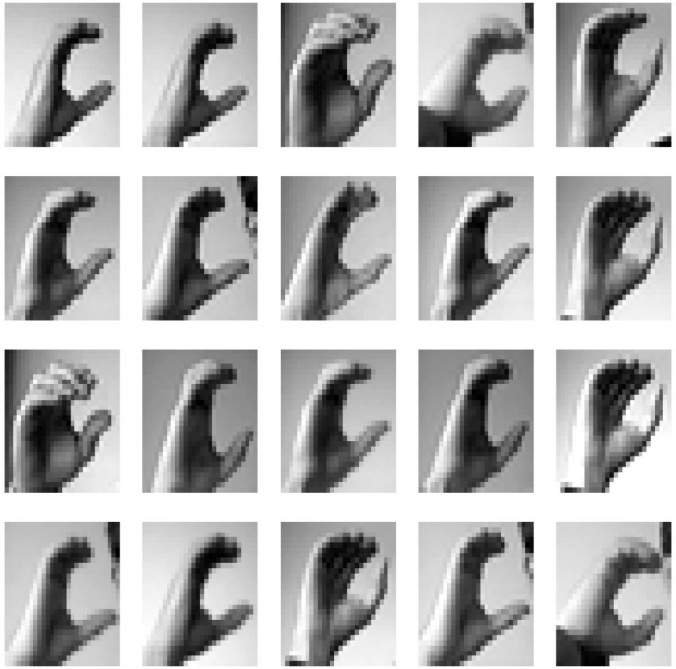
Instant image translator

Real-time translator

Web Applications Demo

Conclusions

- Created powerful models with high accuracy
- Surpassed expectations and completed all goals
- Built web applications for easier communication



Thank you for your time!

Questions or Comments?