# Sign Language Translator

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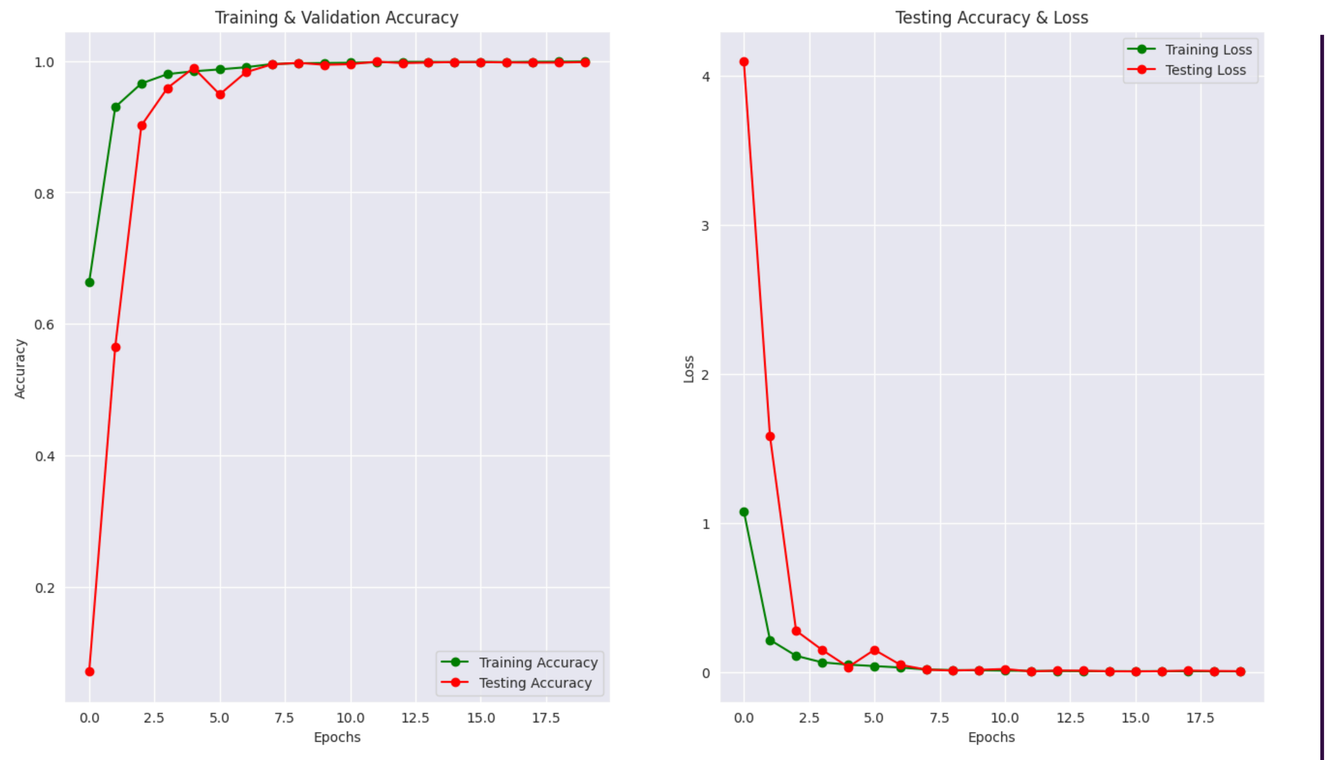
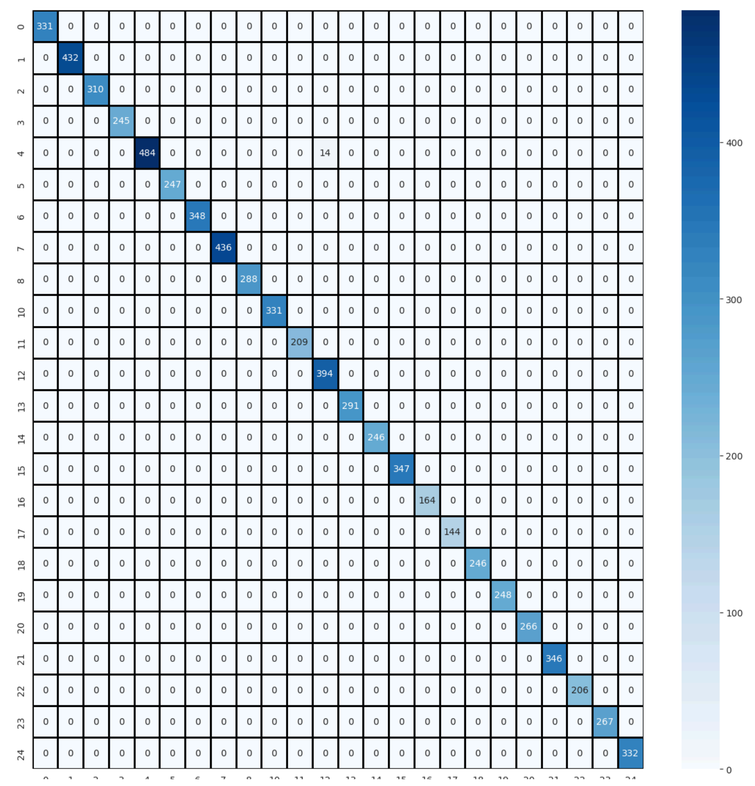
HANDSON AI

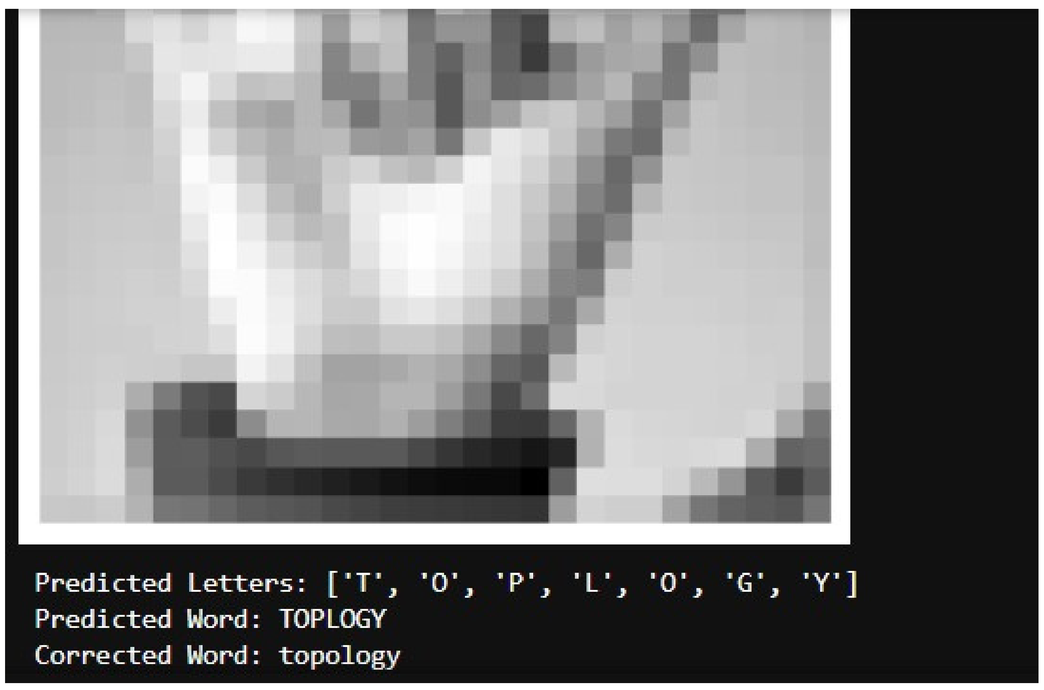

## OVERVIEW

This project aims to improve communication accessibility for individuals with speech or hearing impairments through an ASL recognition system. Using Convolutional Neural Networks (CNNs), it processes ASL alphabet gestures and translates them into letters. Deployed on low-power hardware like the ESP-32 CAM module, the system ensures real-time, edge-device compatibility. The initiative seeks to reduce barriers for the deaf and hard-of-hearing communities, fostering better interaction and understanding.

## RESULTS






```
classes = ["Class " + str(i) for i in range(25) if i != 9]
print(classification_report(y, predictions, target_names = classes))
```

| | precision | recall | f1-score | support |
|---|---|---|---|---|
| Class 0 | 1.00 | 1.00 | 1.00 | 331 |
| Class 1 | 1.00 | 1.00 | 1.00 | 432 |
| Class 2 | 1.00 | 1.00 | 1.00 | 310 |
| Class 3 | 1.00 | 1.00 | 1.00 | 245 |
| Class 4 | 1.00 | 0.97 | 0.99 | 498 |
| Class 5 | 1.00 | 1.00 | 1.00 | 247 |
| Class 6 | 1.00 | 1.00 | 1.00 | 348 |
| Class 7 | 1.00 | 1.00 | 1.00 | 436 |
| Class 8 | 1.00 | 1.00 | 1.00 | 288 |
| Class 10 | 1.00 | 1.00 | 1.00 | 331 |
| Class 11 | 1.00 | 1.00 | 1.00 | 209 |
| Class 12 | 0.97 | 1.00 | 0.98 | 394 |
| Class 13 | 1.00 | 1.00 | 1.00 | 291 |
| Class 14 | 1.00 | 1.00 | 1.00 | 246 |
| Class 15 | 1.00 | 1.00 | 1.00 | 347 |
| Class 16 | 1.00 | 1.00 | 1.00 | 164 |
| Class 17 | 1.00 | 1.00 | 1.00 | 144 |
| Class 18 | 1.00 | 1.00 | 1.00 | 246 |
| Class 19 | 1.00 | 1.00 | 1.00 | 248 |
| Class 20 | 1.00 | 1.00 | 1.00 | 266 |
| Class 21 | 1.00 | 1.00 | 1.00 | 346 |
| Class 22 | 1.00 | 1.00 | 1.00 | 206 |
| Class 23 | 1.00 | 1.00 | 1.00 | 267 |
| Class 24 | 1.00 | 1.00 | 1.00 | 332 |
| accuracy | | | 1.00 | 7172 |
| macro avg | 1.00 | 1.00 | 1.00 | 7172 |
| weighted avg | 1.00 | 1.00 | 1.00 | 7172 |

```
[ ] print("Accuracy of the model is - " , model.evaluate(x_test,y_test)[1]*100 , "%")

225/225 ━━━━━━━━━━━━━━━━━━━━ 1s 4ms/step - accuracy: 0.9980 - loss: 0.0061
Accuracy of the model is -  99.8047947883606 %
```

SCAN ME