Team 075

transladoorss

removing barriers across individuals

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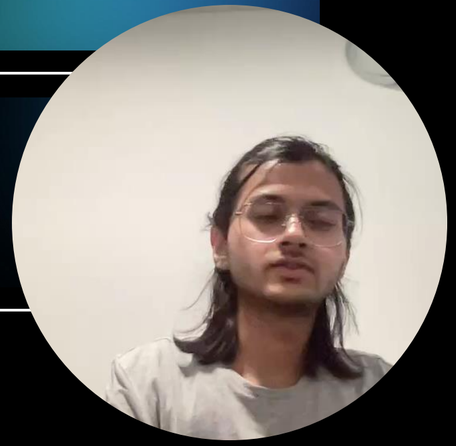

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Technical Architecture::frontend
A walkthrough of our custom html+css pipeline

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A team discussion about design choices, scope decisions, and A summary of the project

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A team discussion about scrapped ideas, alternative approaches and possible future features

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Meet The Team!

Evelyn H.

Hi, my name is Evelyn.
I worked on the ML pipeline with Juno.
I am thrilled to show you our great teamwork for the semester.

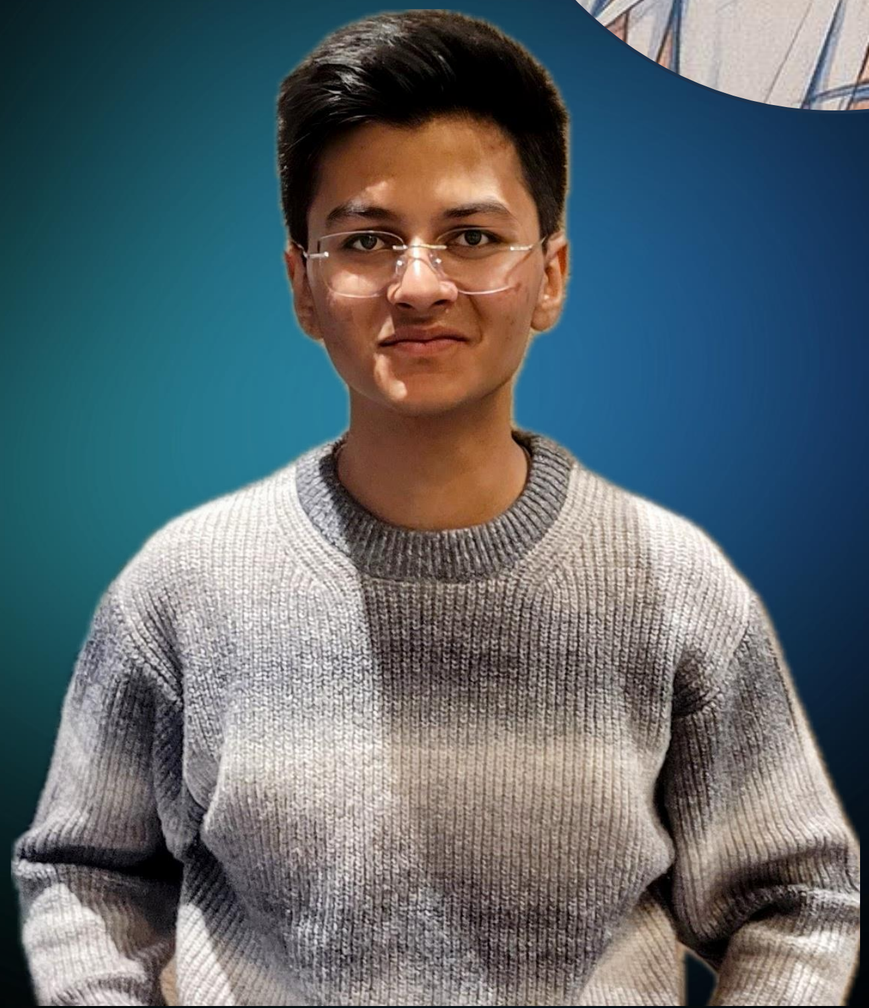
Juno T.

Hello! I'm Juno (also called Juniper!) and I've worked on the ML team for this project. I had some prior experience in convolutional learning, so we decided this was a good plan.

Apart from the nerdy stuff, I love art/illustrations. Kinda in the learning the process, that character on the corner is my current favorite from an illustrator I follow!

p.s. definitely do not search me up on LinkedIn or Instagram because I do not look like that at the moment

my hot take is that attack on titan is better than once piece



Ben V.

I worked on developing the backend server, frontend user interface elements (buttons, toggles, display and video elements), and the network flow between them that ultimately allows the user to interact with the model in a meaningful way.

Kelly S.

Hello, my name is Kelly. I worked for the frontend user interface design and the written content for our project. I have prior experience in web design and I’m comfortable with the languages and workflow needed to set up and deploy a website. Outside of my major, I’m also an arts person. I like to design cute stuff and draw illustrations. I’m happy to bring creative inspirations to our team.

Introduction

(and motivations)

Who we are:

Our goal is to make communication more accessible across different communities

What we do:

We develop ai systems to support individuals in having an active conversation with people who can't interact via talking

Why we do it:

Our motivation was simple. With the widespread seclusion of the
day, if we can even help
person connect with oth
was well worth the effo

Overview

In the next slide, we'll be watching three pieces work together as one smooth pipeline:

↓

The browser becomes the "sensor," pulling a live frame from the webcam the moment we hit translate.

↓

That image is sent to our django backend, where it's quickly validated and standardized, so lighting, size, and framing don't throw things off. From there, the ml layer takes over

↓

A clip-based (contrastive language-image pretraining) model scores the image against a full set of letter descriptions, essentially asking "which letter does this hand look most like?" And returns the strongest match along with a confidence score.

↓

What comes back to the screen is the final payoff of that chain: a real-time prediction you can see update as the camera feed changes.

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Demo

File Edit Selection View Go Run Terminal Help

fa25-fa25-team075-transladoorss

EXPLORER

FA25-FA25-TEAM075-TRANSLADOORSS

- django_server
  - .env
  - .env.example
  - .gitignore
  - db.sqlite3
  - environment.yaml
  - manage.py
  - pytest.ini
  - requirements.txt
- env
  - environment_unified_2.yaml
  - environment_unified.yaml
  - environment-backend.yaml
  - requirements-backend.txt
- js
  - coverage
  - node_modules
  - package-lock.json M
  - package.json
  - scripts.js
  - scripts.test.js
- ml_dev
  - __MACOSX
  - __pycache__
  - data_visualization_tools
  - development
  - env
  - inference
  - saved_weights
  - testing
  - __init__.py
- .gitignore
- .pylintrc
- .rgignore

OUTLINE

TIMELINE

settings.py | test_basic.py | scripts.js | views.py | .gitignore | scripts.test.js | index.html | service.py | clip_a

js > scripts.js > submitFeedback

```
180  function resetFeedbackSection() {
182    const correctBtn = document.getElementById("correctBtn");
183    const incorrectBtn = document.getElementById("incorrectBtn");
184    const correctLabel = document.getElementById("correctLabel");
185
186    feedbackSection.style.display = "none";
187    correctBtn.disabled = true;
188    incorrectBtn.disabled = true;
189    correctLabel.disabled = true;
190    correctLabel.value = "";
191
192    lastCapturedBlob = null;
193    lastPrediction = null;
194  }
195
196  window.addEventListener("DOMContentLoaded", (event) => {
197    // Navbar shrink function
198    var navbarShrink = function () {
199      const navbarCollapsible = document.body.querySelector("#mainNav");
200      if (!navbarCollapsible) {
201        return;
202      }
203      if (window.scrollY === 0) {
204        navbarCollapsible.classList.remove("navbar-shrink");
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

cmd

```
up to date, audited 400 packages in 638ms

58 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities

(clip-env-windows) C:\Users\vogtb\Desktop\cs222\fa25-fa25-team075-transladoorss\js>cd ..

(clip-env-windows) C:\Users\vogtb\Desktop\cs222\fa25-fa25-team075-transladoorss>
```

fix-checkpoint-paths* 0 0 Ben-Vogt (10 hours ago) Ln 157, Col 30 Spaces: 2 UTF-8

Feels colder Now

Search

12/17/2025

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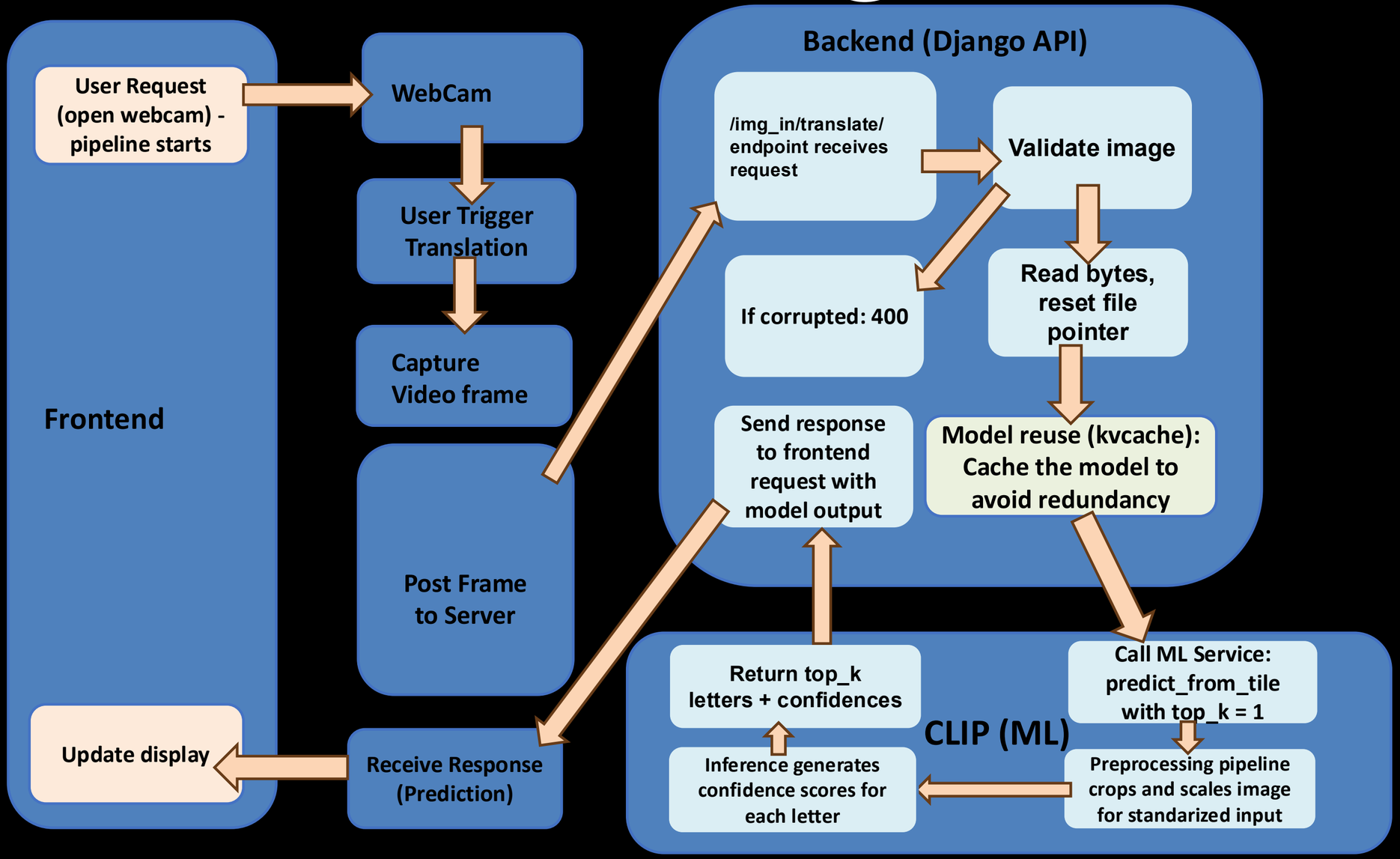
Post Demo Thoughts



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Technical Architecture

Backend

- Backend server written in python powered by django REST framework handles everything the user doesn't need to see.
- Loads and runs the model using the custom ML package written by ML team.
- Routes requests for different features.
- Validates inputs before passing them off to the ML Pipeline.
- Serves the frontend interface at the base address.
- Relays model predictions to frontend webpage for interpretation and display.
- Uses built-in SQLite database to store user feedback, which can later be used to imp model.

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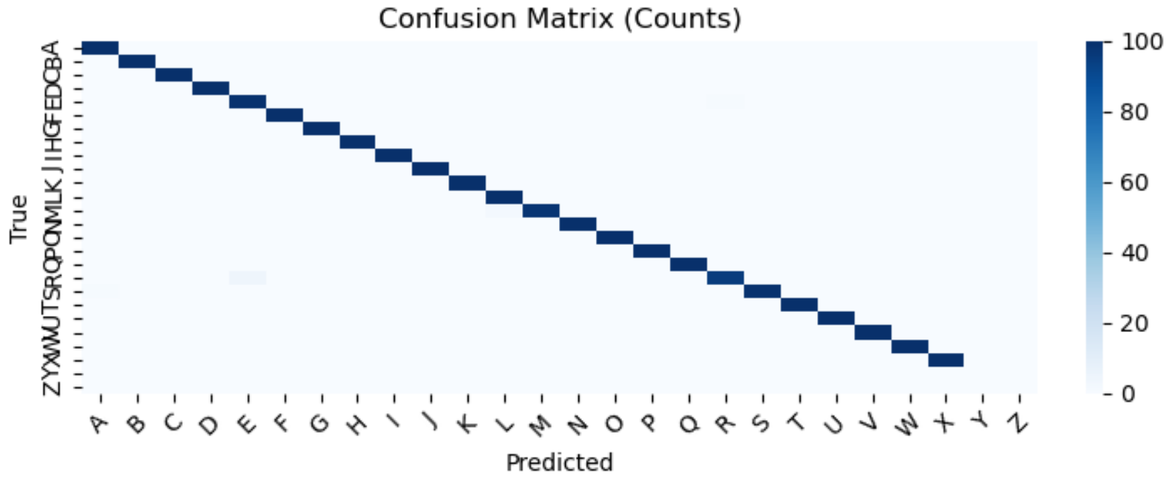
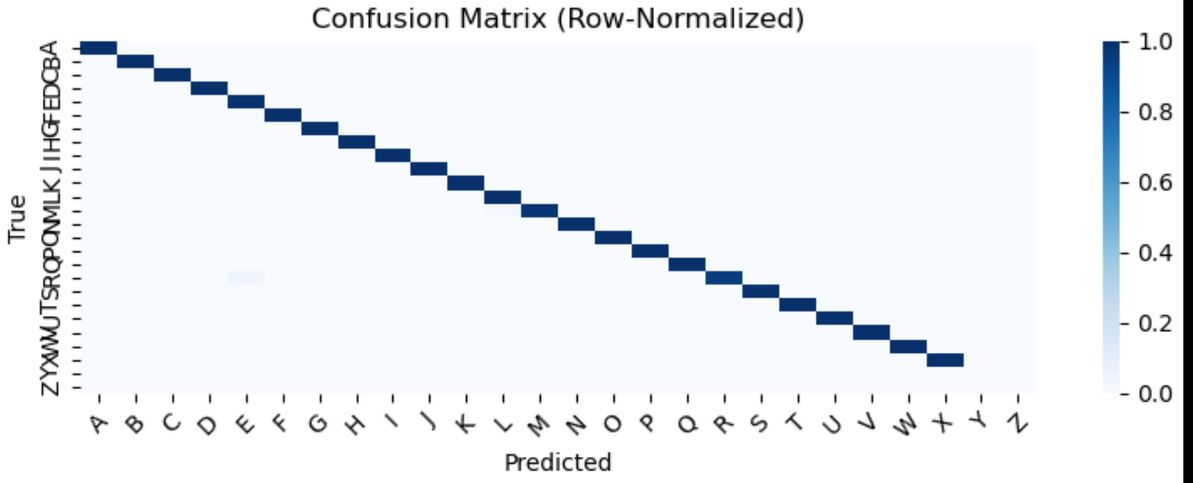
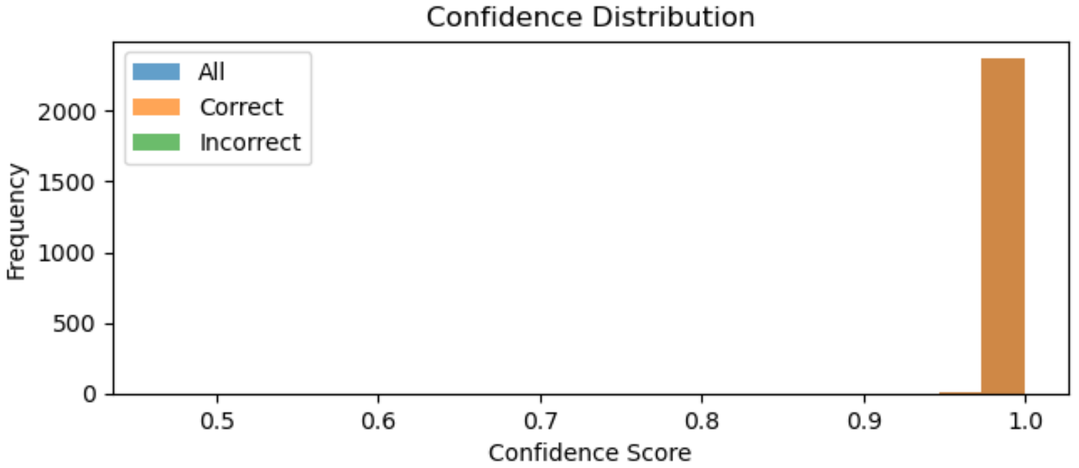
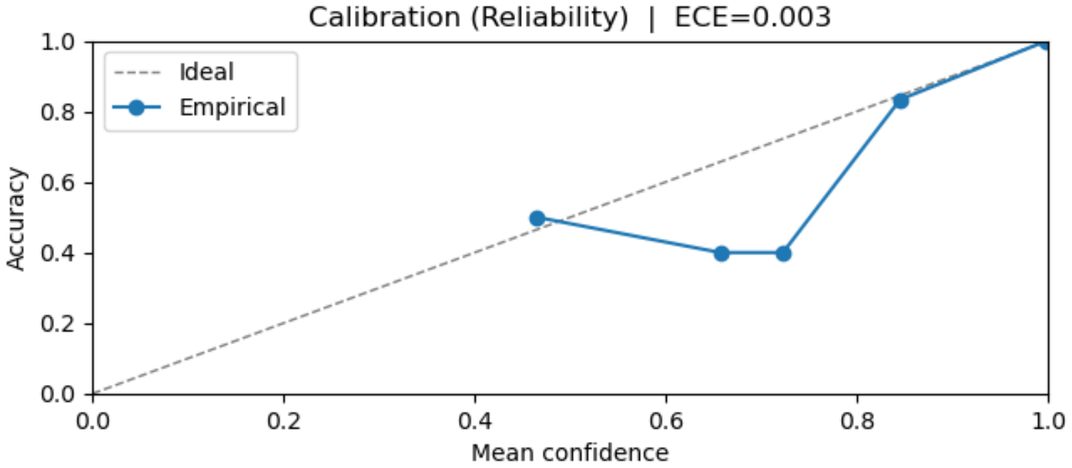
Technical Architecture

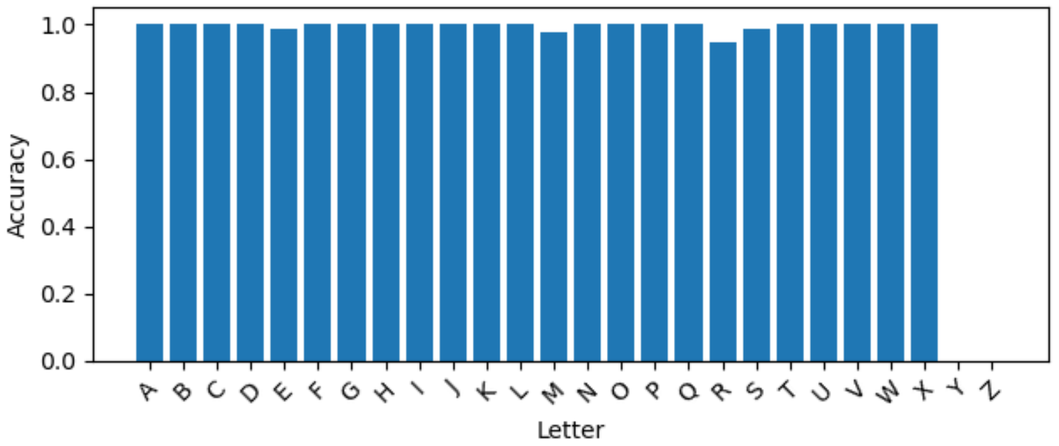
ML











Model + Performance

Dataset: aliciiavs/sign_language_image_dataset split=train
Model ID: /Users/juno/transladoorss-model-dev-env/ml_dev/saved_weights/epoch_7
Device: mps
MPS built: True
MPS available: True
MPS mem (MB): alloc=577
Params (total): 151,277,313
Params (trainable): 151,277,313
Best ckpt: ml_dev/saved_weights/epoch_7 acc=0.985 loss=0.052

Overall Accuracy: 99.62%

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Technical Architecture

Frontend

- User interface via a static HTML + CSS + JS webpage served at the server's base address.
- With user permission, uses the webcam to display a video feed.
- Once the webcam is active, users can get a translation with one click: a single frame is grabbed from the video and relayed to the server via HTTP multipart form (FormData).
- The server sends an HTTP response with json data detailing the model output.
- Predictions are displayed via a text field on the page.
- Optionally, predictions can be displayed with their confidence score, but this is not th behavior.

- Once a prediction has been made, the image used for the prediction will be displayed below.
- Optionally, users can provide feedback on the model's performance: either confirm that it predicted correctly, or provide a correction for what the output should have been.
- If the user provides feedback, HTTP multipart form is once again used to send the image and its correct label to the server for storage and later use in model development.

"Challenges"

Concluding Thoughts

Multiple languages support

Bi-directional text-image-speech pipeline

Developing as a team with different platforms

- We essentially operated on three different OS throughout the development process: some of our team used MacOS, others used Windows, and the Github VMs that run the CI checks used Ubuntu (Linux).
- We used python virtual environments to try and standardize thi… …ultiple pitfalls along the way. Our most avoidable challenge in this … …rk on different parts of the project using different python env… unify the environments later when we put the features tog…
- This was not worth the convenience early on, and cost a … when trying to align python versions and packages, wit… unanticipated differences between platforms.

Credits

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for the photos

Happy designing!