ragfier

lab lab ai

RAGfier

Bridging the Gap Between the Hearing impaired and the Hearing World - AI-Powered

mongoDB®

LlamaIndex

OpenAI API

trulens

PROBLEM STATEMENT

Communication barriers persist between sign language users and the hearing world, hindering inclusive interactions in healthcare, education, and everyday settings. Traditional methods lack efficient real-time translation solutions, increasing the gap between these communities.

SOLUTION STATEMENT

Introducing RAGfier: An AI-powered communication tool that seamlessly translates sign language gestures into spoken language and vice versa, empowering sign language users to communicate effortlessly across various platforms. With text-to-sign language translation and real-time feedback, RAGfier revolutionizes inclusivity, fostering accessible communication in healthcare, education, and daily interactions.

WHAT is RAGfier

RAGfier is an AI-powered communication tool that utilizes real-time sign language translation to bridge the gap between sign language users and the hearing world.

- Real-time sign language translation: RAGfier converts sign language gestures into spoken language and vice versa, facilitating seamless communication between sign language users and hearing individuals.
- Text-to-sign language translation: RAGfier can translate written text into sign language, making it easier for sign language users to access information and engage with digital content.
- Sign language recognition and feedback: RAGfier provides feedback to sign language users, helping them improve their signing accuracy and fluency.

Overall, RAGfier serves as a powerful tool for breaking down communication barriers and promoting inclusivity for sign language users. It has the potential to revolutionize communication in various aspects of life, from healthcare and education to everyday interactions.

RAGfier - Modules

1. **Module 1: ASL Translation**

   Enables users to capture images, upload images, or engage in live translation to convert American Sign Language (ASL) gestures into spoken language or text.

2. **Module 2: ArSL Translation** *UnderDevelopment*

   users can capture or upload images or engage in live translation to convert Arabic Sign Language (ArSL) gestures into spoken language or text.

3. **Module 3: USL Translation** *UnderDevelopment*

   users can capture or upload images or engage in live translation to convert Urdu Sign Language (USL) gestures into spoken language or text.

RAGFIER ARCHITECTURE

User (ASL)

User peform ASL sign and capture photo

photo is captured GPT4- Vision Anallysis & prompt

GPT4-Vision (features)

MongoDB (Storage)

Vector Search (Based on Prompt)

Retrieved Documents

Trulens (user Query)

Trained AI model ‘ Evaluation & Refinement

Merging Result

User

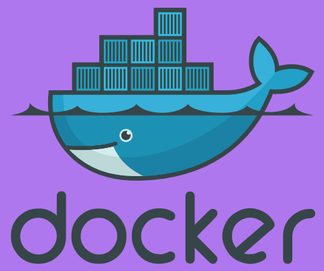
Final response

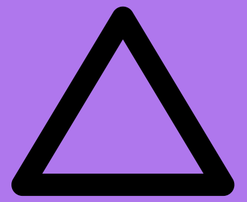
Interface

trulens

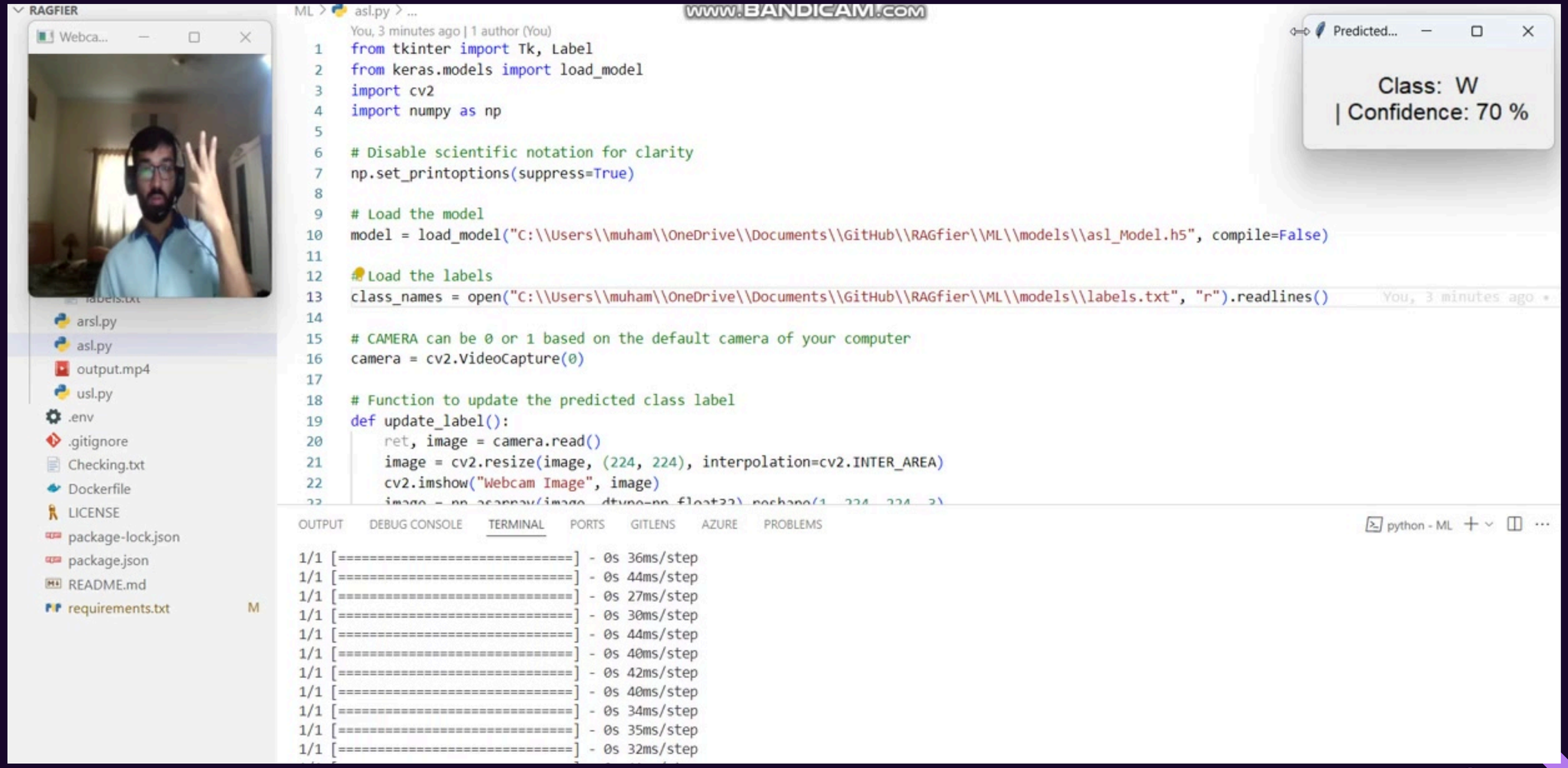
Vercel

Technologies Used

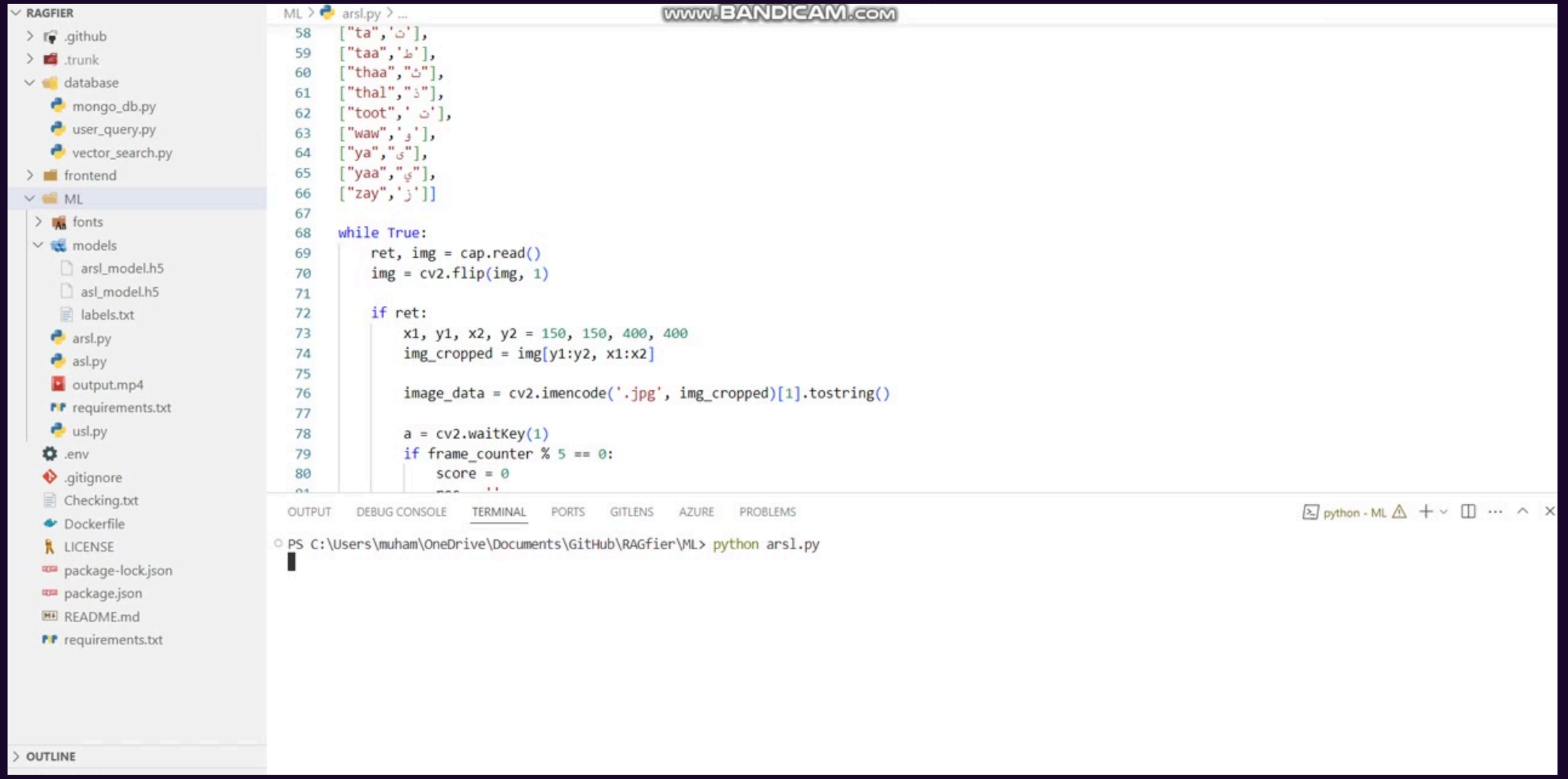




ASL Model


RAGFIER
Webca...
arsl.py
asl.py
output.mp4
usl.py
.env
.gitignore
Checking.txt
Dockerfile
LICENSE
package-lock.json
package.json
README.md
requirements.txt
M
ML > asl.py > ...
www.BANDICAM.com
You, 3 minutes ago | 1 author (You)
from tkinter import Tk, Label
from keras.models import load_model
import cv2
import numpy as np
# Disable scientific notation for clarity
np.set_printoptions(suppress=True)
# Load the model
model = load_model("C:\\Users\\muham\\OneDrive\\Documents\\GitHub\\RAGfier\\ML\\models\\asl_Model.h5", compile=False)
# Load the labels
class_names = open("C:\\Users\\muham\\OneDrive\\Documents\\GitHub\\RAGfier\\ML\\models\\labels.txt", "r").readlines()
You, 3 minutes ago
# CAMERA can be 0 or 1 based on the default camera of your computer
camera = cv2.VideoCapture(0)
# Function to update the predicted class label
def update_label():
ret, image = camera.read()
image = cv2.resize(image, (224, 224), interpolation=cv2.INTER_AREA)
cv2.imshow("Webcam Image", image)
Predicted...
Class: W
| Confidence: 70 %
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
GITLENS
AZURE
PROBLEMS
python - ML
1/1 [==============================] - 0s 36ms/step
1/1 [==============================] - 0s 44ms/step
1/1 [==============================] - 0s 27ms/step
1/1 [==============================] - 0s 30ms/step
1/1 [==============================] - 0s 44ms/step
1/1 [==============================] - 0s 40ms/step
1/1 [==============================] - 0s 42ms/step
1/1 [==============================] - 0s 40ms/step
1/1 [==============================] - 0s 34ms/step
1/1 [==============================] - 0s 35ms/step
1/1 [==============================] - 0s 32ms/step

ArSL Model


RAGFIER
.github
.trunk
database
mongo_db.py
user_query.py
vector_search.py
frontend
ML
fonts
models
arsl_model.h5
asl_model.h5
labels.txt
arsl.py
asl.py
output.mp4
requirements.txt
usl.py
.env
.gitignore
Checking.txt
Dockerfile
LICENSE
package-lock.json
package.json
README.md
requirements.txt
OUTLINE
ML > arsl.py > ...
www.BANDICAM.com
["ta",'ت'],
["taa",'ط'],
["thaa","ث"],
["thal","ذ"],
["toot",' ت'],
["waw",'و'],
["ya","ى"],
["yaa","ي"],
["zay",'ز']]
while True:
ret, img = cap.read()
img = cv2.flip(img, 1)
if ret:
x1, y1, x2, y2 = 150, 150, 400, 400
img_cropped = img[y1:y2, x1:x2]
image_data = cv2.imencode('.jpg', img_cropped)[1].tostring()
a = cv2.waitKey(1)
if frame_counter % 5 == 0:
score = 0
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
GITLENS
AZURE
PROBLEMS
python - ML
PS C:\Users\muham\OneDrive\Documents\GitHub\RAGfier\ML> python arsl.py

RAGfier - TruLens Comparison

GPT-4 Vision

Custom AI model

RAGfier - TruLens Comparison

ASL Model

GPT-4 Vision

The image shows a hand gesture that could be part of a sign language, but without context or motion, it's difficult to determine the exact meaning of the symbol. Sign languages, such as American Sign Language (ASL), rely on a combination of hand shapes, positions, movements, facial expressions, and body language to convey meaning.

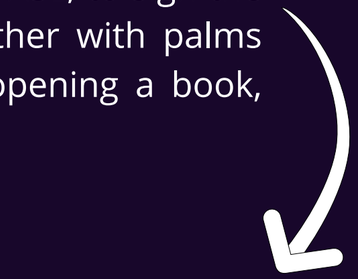
If this gesture is from ASL, it might resemble the sign for the letter "B," where the hand is held upright, palm facing outward, and fingers are held straight together with the thumb across the palm. However, without movement or additional context, it's not possible to definitively say what word this symbol could represent.

In a sentence, if this were the sign for "B," you might use it as follows: "To spell the word 'ball' in ASL, you would start with the sign that looks like the one in the photo, followed by the signs for the letters 'A,' 'L,' and 'L.'"

Custom AI model

The image you've provided appears to show a hand gesture that could be interpreted as the letter "B" in American Sign Language (ASL). In ASL, the letter "B" is signed by holding the hand open with all fingers straight and together, thumb folded across the palm, and the palm facing outward.

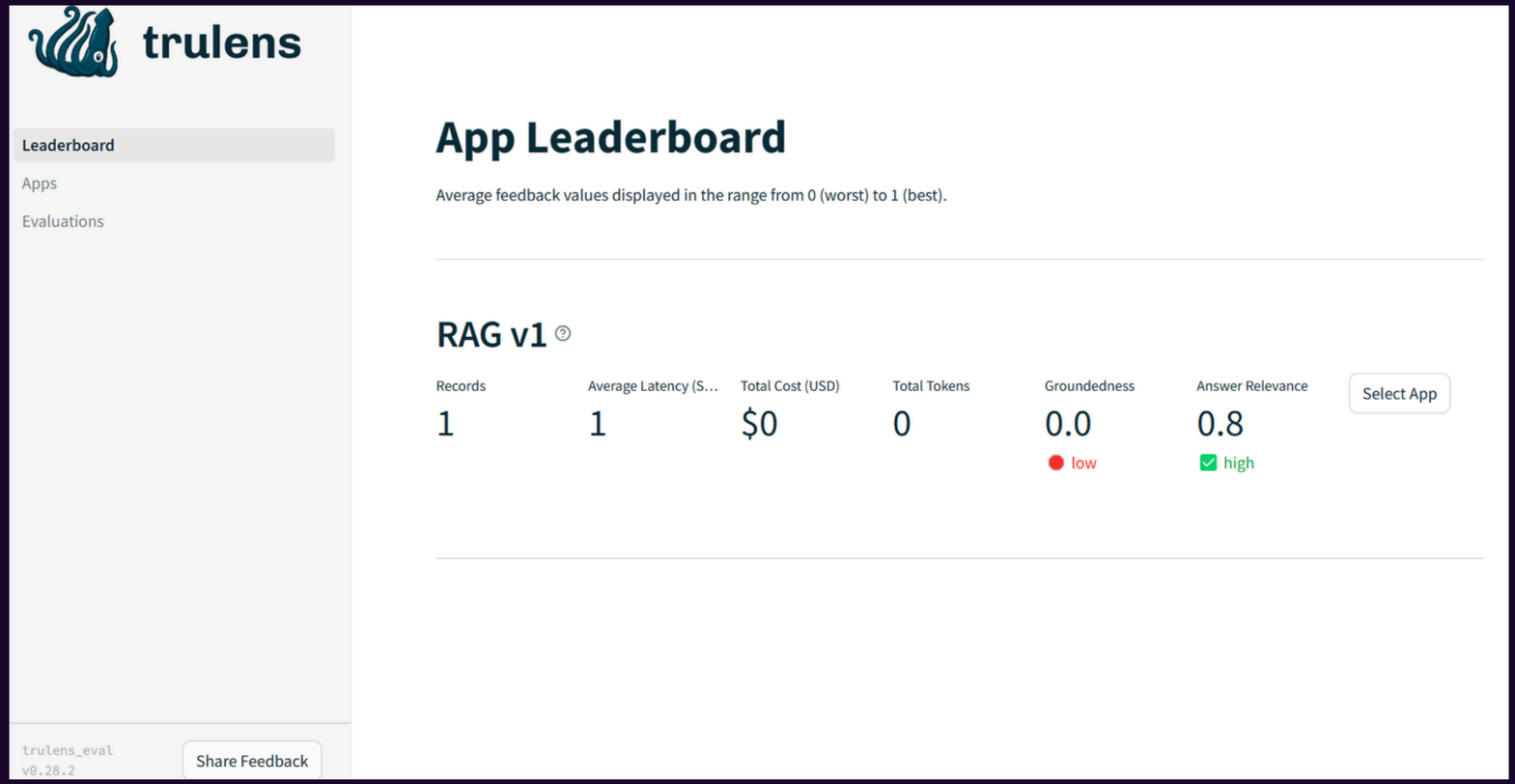
A possible word that starts with the letter "B" and could be used in a sentence is "book." In a sentence, you could say, "I'm going to the library to borrow a new book to read." In ASL, to sign the word "book," you would put your hands together with palms facing each other and then open them as if opening a book, after signing the letter "B" if spelling it out.



ASL_Notebook.ipynb

RAGfier - TruLens Comparison

ASL Model



ASL_Notebook.ipynb

RAGfier - TruLens Comparison

ArSL Model

GPT-4 Vision

The image shows a hand gesture with the thumb sticking up and the index finger pointing upwards, while the other fingers are curled into the palm. This gesture is not specific enough for me to accurately determine its meaning in Arabic Sign Language without additional context, as sign languages vary significantly in their signs and symbols.

However, if we were to predict a possible word that this symbol could represent, it might be something like "number one" or "first," as the gesture somewhat resembles the number 1. In a sentence, this could be used as follows: "In the competition, her performance was considered the best, and she was ranked as number one." Please note that this is a hypothetical example and the actual meaning of the sign could be different in Arabic Sign Language.

Custom AI model

The image you've provided appears to show a hand gesture that could be part of a sign language, possibly representing a letter or concept. Since you've suggested it might resemble the sign for the letter "B" in Arabic Sign Language, let's assume that's the case.

In Arabic Sign Language, the letter "ب" (Bā’) could be used in various words. One possible word that includes this letter is "بيت" (bayt), which means "house" in Arabic.

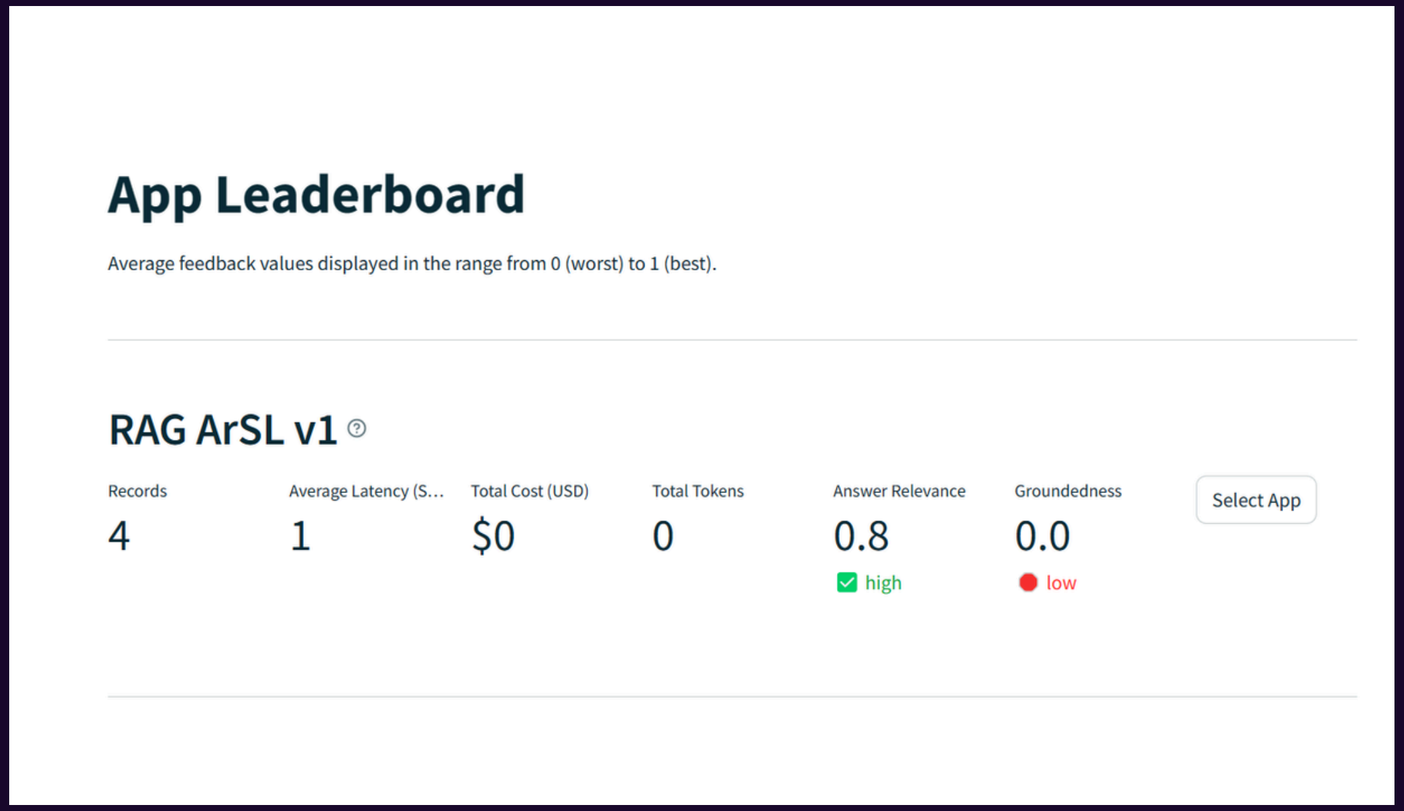
Example sentence: "أنا أحب بيتي كثيرًا." (Ana uhibu bayti kathiran.)
Translation: "I love my house very much."

Please note that sign languages vary greatly around the world, and without context, it's difficult to determine the exact meaning of a sign from a still image.

ArSL_Notebook.ipynb

RAGfier - TruLens Comparison

ArSL Model



ASL_Notebook.ipynb

MARKET OPPORTUNITY

RAGfier: A Sizeable Market Opportunity with High Growth Potential

- Large Target Audience: With over **466 million** people globally experiencing hearing loss (WHO, 2021), RAGfier taps into a substantial market potential even with a small user base.
- Expanding Language Learning Market: The language learning industry is projected to reach $86.22 billion by 2028 (Fortune Business Insights, 2023), presenting an opportunity for RAGfier to cater to sign language learners.
- Accessibility in Education: The global special educational needs market is anticipated to reach $823.4 billion by 2027 (Market Research Future, 2023), positioning RAGfier as a valuable tool in enhancing accessibility for learners with hearing impairments.

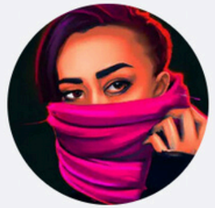
ragfier

OUR TEAM

SYED SHAH HUSSAIN BADSHAH

syedshahhussain

MERN Developer X CyberSecurity



Sandra Ashipala

sandra_ashipala616

Software Engineer DevOps

Muhammad Inaamullah

Inni

Machine Learning Engineer

Vaea Garrido

Elenafox77

THANK YOU