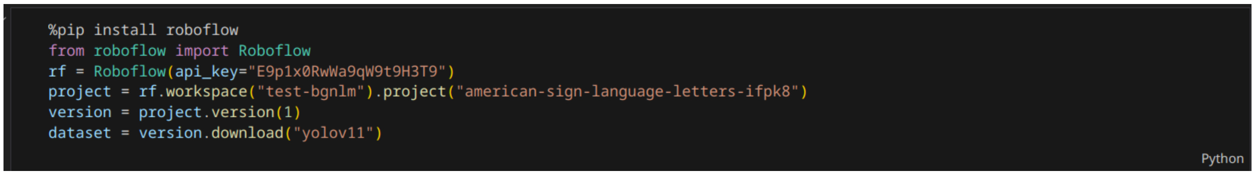
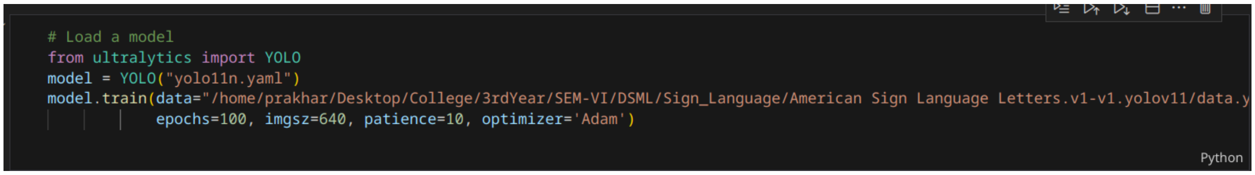
Code For DSML Project

Training Code

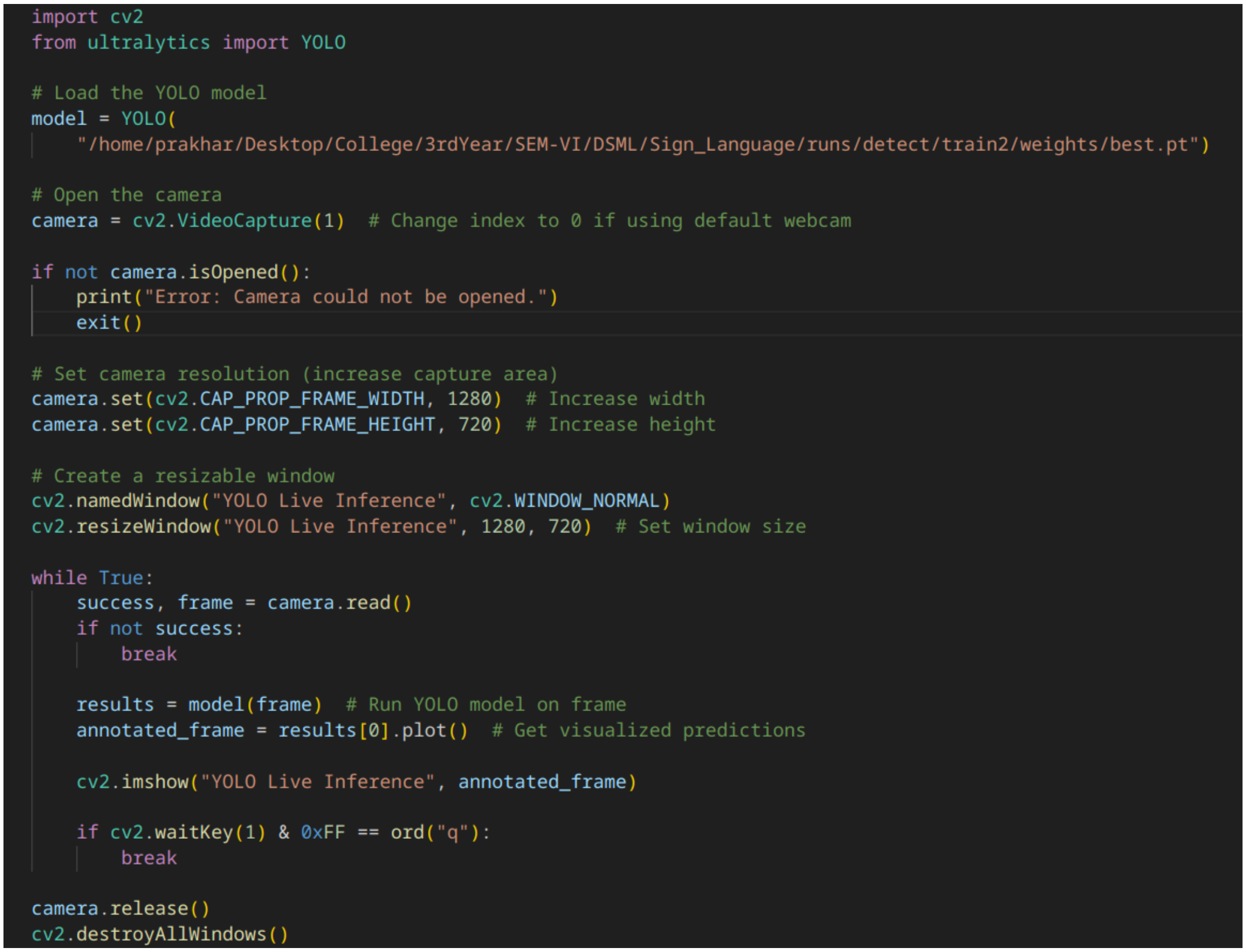


```
%pip install roboflow
from roboflow import Roboflow
rf = Roboflow(api_key="E9p1x0RwWa9qW9t9H3T9")
project = rf.workspace("test-bgnlm").project("american-sign-language-letters-ifpk8")
version = project.version(1)
dataset = version.download("yolov11")
```



```
# Load a model
from ultralytics import YOLO
model = YOLO("yolo11n.yaml")
model.train(data="/home/prakhar/Desktop/College/3rdYear/SEM-VI/DSML/Sign_Language/American Sign Language Letters.v1-v1.yolov11/data.y
            epochs=100, imgsz=640, patience=10, optimizer='Adam')
```

Inference Code



```
import cv2
from ultralytics import YOLO

# Load the YOLO model
model = YOLO(
    "/home/prakhar/Desktop/College/3rdYear/SEM-VI/DSML/Sign_Language/runs/detect/train2/weights/best.pt")

# Open the camera
camera = cv2.VideoCapture(1)  # Change index to 0 if using default webcam

if not camera.isOpened():
    print("Error: Camera could not be opened.")
    exit()

# Set camera resolution (increase capture area)
camera.set(cv2.CAP_PROP_FRAME_WIDTH, 1280)  # Increase width
camera.set(cv2.CAP_PROP_FRAME_HEIGHT, 720)  # Increase height

# Create a resizable window
cv2.namedWindow("YOLO Live Inference", cv2.WINDOW_NORMAL)
cv2.resizeWindow("YOLO Live Inference", 1280, 720)  # Set window size

while True:
    success, frame = camera.read()
    if not success:
        break

    results = model(frame)  # Run YOLO model on frame
    annotated_frame = results[0].plot()  # Get visualized predictions

    cv2.imshow("YOLO Live Inference", annotated_frame)

    if cv2.waitKey(1) & 0xFF == ord("q"):
        break

camera.release()
cv2.destroyAllWindows()
```