from dotenv import load\_dotenv

import os

from PIL import Image, ImageDraw

import sys

from matplotlib import pyplot as plt

from azure.core.exceptions import HttpResponseError

import requests

# Import namespaces

#import namespaces

from azure.ai.vision.imageanalysis import ImageAnalysisClient

from azure.ai.vision.imageanalysis.models import VisualFeatures

from azure.core.credentials import AzureKeyCredential

def main():

    global cv\_client

    try:

        # Get Configuration Settings

        load\_dotenv()

        ai\_endpoint = os.getenv('AI\_SERVICE\_ENDPOINT')

        ai\_key = os.getenv('AI\_SERVICE\_KEY')

        # Get image

        image\_file = 'images/street.jpg'

        if len(sys.argv) > 1:

            image\_file = sys.argv[1]

        with open(image\_file, "rb") as f:

            image\_data = f.read()

        # Authenticate Azure AI Vision client

            # Authenticate Azure AI Vision client

        cv\_client = ImageAnalysisClient(

            endpoint=ai\_endpoint,

            credential=AzureKeyCredential(ai\_key)

        )

        # Analyze image

        AnalyzeImage(image\_file, image\_data, cv\_client)

    except Exception as ex:

        print(ex)

def AnalyzeImage(image\_filename, image\_data, cv\_client):

    print('\nAnalyzing image...')

    try:

        # Get result with specified features to be retrieved

        # Get result with specified features to be retrieved

        result = cv\_client.analyze(

            image\_data=image\_data,

            visual\_features=[

                VisualFeatures.CAPTION,

                VisualFeatures.DENSE\_CAPTIONS,

                VisualFeatures.TAGS,

                VisualFeatures.OBJECTS,

                VisualFeatures.PEOPLE],

        )

    except HttpResponseError as e:

        print(f"Status code: {e.status\_code}")

        print(f"Reason: {e.reason}")

        print(f"Message: {e.error.message}")

    # Display analysis results

        # Display analysis results

# Get image captions

    if result.caption is not None:

        print("\nCaption:")

        print(" Caption: '{}' (confidence: {:.2f}%)".format(result.caption.text, result.caption.confidence \* 100))

    # Get image dense captions

    if result.dense\_captions is not None:

        print("\nDense Captions:")

        for caption in result.dense\_captions.list:

            print(" Caption: '{}' (confidence: {:.2f}%)".format(caption.text, caption.confidence \* 100))

    # Get image tags

    # Get objects in the image

            # Get objects in the image

    if result.objects is not None:

        print("\nObjects in image:")

        # Prepare image for drawing

        image = Image.open(image\_filename)

        fig = plt.figure(figsize=(image.width/100, image.height/100))

        plt.axis('off')

        draw = ImageDraw.Draw(image)

        color = 'cyan'

        for detected\_object in result.objects.list:

            # Print object name

            print(" {} (confidence: {:.2f}%)".format(detected\_object.tags[0].name, detected\_object.tags[0].confidence \* 100))

            # Draw object bounding box

            r = detected\_object.bounding\_box

            bounding\_box = ((r.x, r.y), (r.x + r.width, r.y + r.height))

            draw.rectangle(bounding\_box, outline=color, width=3)

            plt.annotate(detected\_object.tags[0].name,(r.x, r.y), backgroundcolor=color)

        # Save annotated image

        plt.imshow(image)

        plt.tight\_layout(pad=0)

        outputfile = 'objects.jpg'

        fig.savefig(outputfile)

        print('  Results saved in', outputfile)

    # Get people in the image

    if result.people is not None:

        print("\nPeople in image:")

        # Prepare image for drawing

        image = Image.open(image\_filename)

        fig = plt.figure(figsize=(image.width/100, image.height/100))

        plt.axis('off')

        draw = ImageDraw.Draw(image)

        color = 'cyan'

        for detected\_people in result.people.list:

            # Draw object bounding box

            r = detected\_people.bounding\_box

            bounding\_box = ((r.x, r.y), (r.x + r.width, r.y + r.height))

            draw.rectangle(bounding\_box, outline=color, width=3)

            # Return the confidence of the person detected

            #print(" {} (confidence: {:.2f}%)".format(detected\_people.bounding\_box, detected\_people.confidence \* 100))

        # Save annotated image

        plt.imshow(image)

        plt.tight\_layout(pad=0)

        outputfile = 'people.jpg'

        fig.savefig(outputfile)

        print('  Results saved in', outputfile)

    # Get image tags

    if result.tags is not None:

        print("\nTags:")

        for tag in result.tags.list:

            print(" Tag: '{}' (confidence: {:.2f}%)".format(tag.name, tag.confidence \* 100))

if \_\_name\_\_ == "\_\_main\_\_":

    main()

Images.analysis py

AI\_SERVICE\_ENDPOINT=https://sachinbehera.cognitiveservices.azure.com/

AI\_SERVICE\_KEY=3XfF3ikO1RkpPZdPmJfMG3z4I3SaoIZMPd9raeYkWZBYSUxbbodrJQQJ99BAACYeBjFXJ3w3AAAEACOG0QJR

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> images/street.jpg

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/street.jpg

Analyzing image...

Caption:

Caption: 'a man walking a dog on a leash on a street' (confidence: 82.07%)

Dense Captions:

Caption: 'a man walking a dog on a leash on a street' (confidence: 82.07%)

Caption: 'a man walking on a street' (confidence: 69.02%)

Caption: 'a yellow car on the street' (confidence: 78.20%)

Caption: 'a black dog walking on the street' (confidence: 75.31%)

Caption: 'a blurry image of a blue car' (confidence: 82.01%)

Caption: 'a yellow taxi cab on the street' (confidence: 72.44%)

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/person.jpg

Analyzing image...

Caption:

Caption: 'a man in a suit' (confidence: 78.55%)

Dense Captions:

Caption: 'a man in a suit' (confidence: 78.56%)

Caption: 'a man in a suit giving a thumbs up' (confidence: 80.96%)

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/person.jpg

Analyzing image...

Caption:

Caption: 'a man in a suit' (confidence: 78.54%)

Dense Captions:

Caption: 'a man in a suit' (confidence: 78.55%)

Caption: 'a man in a suit giving a thumbs up' (confidence: 80.96%)

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/person.jpg

Analyzing image...

Caption:

Caption: 'a man in a suit' (confidence: 78.55%)

Dense Captions:

Caption: 'a man in a suit' (confidence: 78.55%)

Caption: 'a man in a suit giving a thumbs up' (confidence: 80.96%)

Tags:

Tag: 'clothing' (confidence: 99.72%)

Tag: 'person' (confidence: 99.33%)

Tag: 'human face' (confidence: 98.89%)

Tag: 'man' (confidence: 94.58%)

Tag: 'orator' (confidence: 90.42%)

Tag: 'glasses' (confidence: 89.57%)

Tag: 'speech' (confidence: 89.33%)

Tag: 'spokesperson' (confidence: 88.82%)

Tag: 'public speaking' (confidence: 85.86%)

Tag: 'shirt' (confidence: 85.21%)

Tag: 'gentleman' (confidence: 85.02%)

Tag: 'suit' (confidence: 84.60%)

Tag: 'healthcare' (confidence: 41.78%)

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/person.jpg

Analyzing image...

Caption:

Caption: 'a man in a suit' (confidence: 78.55%)

Dense Captions:

Caption: 'a man in a suit' (confidence: 78.56%)

Caption: 'a man in a suit giving a thumbs up' (confidence: 80.96%)

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Tag: 'gentleman' (confidence: 85.02%)

Tag: 'suit' (confidence: 84.60%)

Tag: 'healthcare' (confidence: 41.78%)

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/person.jpg

Analyzing image...

Caption:

Caption: 'a man in a suit' (confidence: 78.55%)

Dense Captions:

Caption: 'a man in a suit' (confidence: 78.55%)

Caption: 'a man in a suit giving a thumbs up' (confidence: 80.96%)

Objects in image:

person (confidence: 87.50%)

Results saved in objects.jpg

Tags:

Tag: 'clothing' (confidence: 99.72%)

Tag: 'person' (confidence: 99.33%)

Tag: 'human face' (confidence: 98.89%)

Tag: 'man' (confidence: 94.58%)

Tag: 'orator' (confidence: 90.42%)

Tag: 'glasses' (confidence: 89.57%)

Tag: 'speech' (confidence: 89.33%)

Tag: 'spokesperson' (confidence: 88.82%)

Tag: 'public speaking' (confidence: 85.86%)

Tag: 'shirt' (confidence: 85.21%)

Tag: 'gentleman' (confidence: 85.02%)

Tag: 'suit' (confidence: 84.60%)

Tag: 'healthcare' (confidence: 41.78%)

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/person.jpg

Analyzing image...

Caption:

Caption: 'a man in a suit' (confidence: 78.55%)

Dense Captions:

Caption: 'a man in a suit' (confidence: 78.55%)

Caption: 'a man in a suit giving a thumbs up' (confidence: 80.96%)

Objects in image:

person (confidence: 87.50%)

Results saved in objects.jpg

People in image:

Results saved in people.jpg

Tags:

Tag: 'clothing' (confidence: 99.72%)

Tag: 'person' (confidence: 99.33%)

Tag: 'human face' (confidence: 98.89%)

Tag: 'man' (confidence: 94.58%)

Tag: 'orator' (confidence: 90.42%)

Tag: 'glasses' (confidence: 89.57%)

Tag: 'speech' (confidence: 89.33%)

Tag: 'spokesperson' (confidence: 88.82%)

Tag: 'public speaking' (confidence: 85.86%)

Tag: 'shirt' (confidence: 85.21%)

Tag: 'gentleman' (confidence: 85.02%)

Tag: 'suit' (confidence: 84.60%)

Tag: 'healthcare' (confidence: 41.78%)

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/street.jpg

Analyzing image...

Caption:

Caption: 'a man walking a dog on a leash on a street' (confidence: 82.07%)

Dense Captions:

Caption: 'a man walking a dog on a leash on a street' (confidence: 82.06%)

Caption: 'a man walking on a street' (confidence: 69.02%)

Caption: 'a yellow car on the street' (confidence: 78.17%)

Caption: 'a black dog walking on the street' (confidence: 75.31%)

Caption: 'a blurry image of a blue car' (confidence: 82.01%)

Caption: 'a yellow taxi cab on the street' (confidence: 72.44%)

Objects in image:

car (confidence: 72.40%)

taxi (confidence: 77.00%)

person (confidence: 78.10%)

dog (confidence: 54.40%)

Results saved in objects.jpg

People in image:

Results saved in people.jpg

Tags:

Tag: 'outdoor' (confidence: 99.87%)

Tag: 'land vehicle' (confidence: 99.02%)

Tag: 'vehicle' (confidence: 98.89%)

Tag: 'building' (confidence: 98.55%)

Tag: 'road' (confidence: 95.98%)

Tag: 'wheel' (confidence: 95.14%)

Tag: 'street' (confidence: 94.71%)

Tag: 'person' (confidence: 93.01%)

Tag: 'clothing' (confidence: 91.19%)

Tag: 'taxi' (confidence: 90.95%)

Tag: 'car' (confidence: 84.01%)

Tag: 'dog' (confidence: 82.68%)

Tag: 'yellow' (confidence: 77.08%)

Tag: 'walking' (confidence: 74.11%)

Tag: 'city' (confidence: 64.80%)

Tag: 'woman' (confidence: 57.53%)

PS C:\Users\Student\Downloads\mslearn-ai-vision\Labfiles\01-analyze-images\Python\image-analysis> python image-analysis.py images/street.jpg

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Caption: 'a man walking on a street' (confidence: 69.02%)

Caption: 'a yellow car on the street' (confidence: 78.22%)

Caption: 'a black dog walking on the street' (confidence: 75.33%)

Caption: 'a blurry image of a blue car' (confidence: 82.01%)

Caption: 'a yellow taxi cab on the street' (confidence: 72.44%)

Objects in image:

car (confidence: 72.40%)

taxi (confidence: 77.00%)

person (confidence: 78.10%)

dog (confidence: 54.40%)

Results saved in objects.jpg

People in image:

Results saved in people.jpg

Tags:

Tag: 'outdoor' (confidence: 99.87%)

Tag: 'land vehicle' (confidence: 99.02%)

Tag: 'vehicle' (confidence: 98.89%)

Tag: 'building' (confidence: 98.55%)

Tag: 'road' (confidence: 95.98%)

Tag: 'wheel' (confidence: 95.14%)

Tag: 'street' (confidence: 94.71%)

Tag: 'person' (confidence: 93.01%)

Tag: 'clothing' (confidence: 91.19%)

Tag: 'taxi' (confidence: 90.95%)

Tag: 'car' (confidence: 84.01%)

Tag: 'dog' (confidence: 82.68%)

Tag: 'yellow' (confidence: 77.08%)

Tag: 'walking' (confidence: 74.11%)

Tag: 'city' (confidence: 64.80%)

Tag: 'woman' (confidence: 57.53%)

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