ANALYSIS

Libraries Used:

TensorFlow: A popular open-source machine learning library.

Keras: A high-level neural networks API (now integrated with TensorFlow) that simplifies the process of building and training deep learning models.

Pre-trained Model:

The program uses the MobileNetV2 model pre-trained on the ImageNet dataset. This model is capable of classifying images into 1000 different categories.

Image Classification Function:

The classify_image function takes an image file path as input.

It loads the image, preprocesses it to match the model's input requirements, and makes predictions using the pre-trained model.

The top three predictions with their labels and confidence scores are then printed.

Example Usage:

An example usage is provided with the path to an image file. You should replace 'path/to/your/image.jpg' with the actual path to an image file on your system.

This example demonstrates a basic AI task of image classification. Depending on your specific needs or interests, you can explore more complex tasks such as natural language processing, reinforcement learning, or computer vision. Feel free to modify and expand upon this example based on your requirements.

PROGRAM

```
# Import necessary libraries
import tensorflow as tf
from tensorflow.keras.preprocessing import image
from tensorflow.keras.applications.mobilenet_v2 import MobileNetV2, preprocess_input,
decode_predictions
import numpy as np

# Load pre-trained MobileNetV2 model
model = MobileNetV2(weights='imagenet')

# Function to perform image classification
def classify_image(image_path):
    img = image.load_img(image_path, target_size=(224, 224))
    img_array = image.img_to_array(img)
    img_array = np.expand_dims(img_array, axis=0)
    img_array = preprocess_input(img_array)

    predictions = model.predict(img_array)
    decoded_predictions = decode_predictions(predictions, top=3)[0]

    print("Predictions:")
    for i, (imagenet_id, label, score) in enumerate(decoded_predictions):
        print(f"{i + 1}: {label} ({score:.2f})")

# Example usage
image_path = 'path/to/your/image.jpg'
classify_image(image_path)
```