Simulating TensorFlow Lite Model on Raspberry Pi 3B+

1. Setup and Preparation

Update and Upgrade Raspberry Pi OS:

Run the following command to update and upgrade your system:

```
sudo apt-get update && sudo apt-get upgrade
```

Install Required Libraries:

Ensure Python 3 and pip are installed by running:

```
sudo apt-get install python3-pip
```

Install TensorFlow Lite Runtime:

```
pip3 install tflite-runtime
```

Verify the Installation:

Run the following command to verify the installation:

```
python3 -c "import tflite_runtime.interpreter as tflite; print('TensorFlow Lite Runtime installed successfully')"
```

2. Transfer the Model

Transfer the lightweight_model.tflite file to your Raspberry Pi using one of the following methods:

Using SCP (Secure Copy):

```
scp lightweight_model.tflite pi@<raspberry-pi-ip>:/home/pi/
```

Using USB Drive:

Copy the model to a USB drive, then connect it to the Raspberry Pi.

3. Modify the Inference Script

Modify the script to save inference output. You can save the output as a text file or a CSV file.

Save as a Text File:

Use the following Python script:

```
import numpy as np
import tflite_runtime.interpreter as tflite
import time
# Code snippet continues...
```

Save as a CSV File:

Use the following Python script:

```
import numpy as np
import tflite_runtime.interpreter as tflite
import csv
# Code snippet continues...
```

4. Transfer the Output File

After generating the output file on your Raspberry Pi, transfer it to your local machine:

Using SCP Command:

```
scp pi@<raspberry-pi-ip>:/home/pi/output_results.txt .
```

or

```
scp pi@<raspberry-pi-ip>:/home/pi/output_results.csv .
```

Using USB Drive:

Copy the file to a USB drive connected to the Raspberry Pi and transfer it to your computer.