ECE 361E: Machine Learning and Data Analytics for Edge AI - HW3

## Problem 1 + Problem 3 [35p]: PyTorch Evaluation of VGG models

### Question 2: [15p]

Table 1.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | Training Accuracy [%] | Test Accuracy [%] | Total time for  training [s] | Number of trainable  parameters | FLOPs | GPU memory during  training [MB] |
| VGG11 | 99.34 | 77.85 | 1917.89 | 9750922 | 153293824 | 2209 |
| VGG16 | 94.19 | 78.51 | 2465.17 | 15245130 | 313725952 | 2467 |
| MobileNet-V1 | 99.32 | 77.62 | 2207.74 | 3217226 | 48001024 | 1149 |

### Question 3: [10p]

Chart

Description automatically generated

## Problem 2 + Problem 3 [45p]: Deployment on Edge Devices Using ONNX

### Question 2: [20p]

Table 2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Total Inference Time [s] | | RAM Memory [MB] | | Accuracy [%] | |
|  | MC1 | RaspberryPi | MC1 | RaspberryPi | MC1 | RaspberryPi |
| VGG11 | 619.95 | 678.20 | 61 | 58 | 77.85 | 77.85 |
| VGG16 | 1065.13 | 1239.52 | 81 | 97 | 78.51 | 78.51 |
| MobileNet-V1 | 443.93 | 322.62 | 32 | 39 | 77.62 | 77.62 |

### Question 3: [20p]

|  |  |  |
| --- | --- | --- |
| Model | MC1 total energy consumption [J] | RaspberryPi total energy consumption [J] |
| VGG11 | 6872.17565 | 3577.1884 |
| VGG16 | 12138.57735 | 6376.5342 |
| MobileNet-V1 | 4395.269249999999 | 1538.25835 |