**Evaluation**

In this section, we attempt to compare and analyze the results for each of the CNN to identify which one has better accuracy in classification and identification.

|  |  |  |
| --- | --- | --- |
| Model | Accuracy in MNIST | Accuracy in CIFAR-10 |
| AlexNet | ?? | 76.190% |
| ResNet | 90.625% | 79.460% |
| VGGNet | 93.359% | 89.790% |

Table 1 Accuracy in MNIST & CIFAR-10 with different CNNs

As shown in the table, when the CIFAR-10 data set was used for testing, the best accuracy performance of VGGNet was the highest, reaching 89.790%. The highest accuracy demonstrates VGG-16 has better classification ability and eliminating unrelated information.VGG-16 makes improvement at the expense of longer training time. The possible reason for this result might be that AlexNet retains more irrelevant information in the final convolutional layer than VGG-16, which interferes with the final prediction. In addition, the overmuch layers in ResNet lead to functional complexity, which result in over-fitting problems and ultimately accuracy reduction.[1]

References

[1] Zhang, Yue, "Evaluation of CNN Models with Fashion MNIST Data" (2019). Creative Components. 364.