Machine Learning Project 3

In order to run the code:

The .ipynb file is pretty self-explanatory. Just run each cell in order, and everything will work.

I will note that I designed everything to be modular, so every architecture can take in either dataset. In addition, the functions that are in the program can run either dataset as well as any model (this will make more sense when you read the code)

Each of the final four cells in the notebook is designed to test a quarter of the models. They are divided by the MLP/CNN architectures as well as the MNIST/CIFAR Datasets. The way I designed it, the program reports the best parameters for each model on each dataset as well as the validation accuracy for that model. Then, it picks the best of the three and runs that model on the test set to report that accuracy. In the tables of my report, it shows the best accuracies of these for each dataset.

Use of AI:

Google Colab has an autofill feature where it tries to predict what you are trying to code, and most of the time it was correct. I'm not sure if that is considered plagiarism, but often times when writing the code, I would write the first two lines, and then it would autofill the next five lines.

I also used Gemini, google Colab's in-built AI tool, to verify whether or not my code actually was doing what I wanted it to do, since I was unsure about whether or not I designed it correctly. I also had Gemini insert lines to make my code run on the GPU if one was available. Unfortunately, I think the chats are deleted after I exit the coding session, and I'm not sure how to get it back. This is all I used it for, and every other interaction with the AI is documented in the AI transcript