CS 4476 PS6

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Part 1: Standard Scaler: Why did we use StandardScaler instead of looping over all the dataset twice for mean and standard deviation? Why a simple loop will not be a good choice in a deployed production grade ML system?

We used StandardScaler because with StandardScaler we can do it in one loop, so it is good for reducing the runtime. StandardScaler allow us to compute the mean and standard deviation in an online fashion, using batches of data at a time.

It is hard to debug in a simple loop.

Part 1: Why do we normalize our data (0 mean, unit standard deviation)?

We normalize data to change the values of data in the dataset to a common scale, without distorting differences in the ranges of values.

Standardization improves the numerical stability of the model and often reduces training time.

Part 3: Loss function. Why did we need a loss function?

Loss function is a method of evaluating how well the algorithm models the dataset. If the model's predictions are bad, loss function will output a high number. If algorithm is good, loss function will produce a low number.

Part 3: Explain the reasoning behind the loss function used

I used Cross entropy loss function. It combines LogSoftmax and NLLLoss in a single class. Cross entropy loss is good to use in classification tasks like the one we are doing in this homework.

Part 5: Training SimpleNet

<Loss plot here>   <Accuracy plot here>

Final training accuracy value:

Final validation accuracy value:

Conclusion: briefly discuss what you have learned from this project.

<Text solution here>

EC1.1: Screenshot of your get_data_augmentation_transforms()

<Screenshot here if attempted; do not delete the slide if not attempted>

EC1: Training to solve overfitting

<Loss plot here>   <Accuracy plot here>

Final training accuracy value:

Final validation accuracy value:

EC2 AlexNet: Training Alexnet

<Loss plot here>   <Accuracy plot here>

Final training accuracy value:

Final validation accuracy value: