HW 6 - Neural Nets Responses

Started: Mar 4 at 10:01pm

Quiz Instructions

⋮⋮

Question 1 1 pts

What effect did increasing just the learning rate from 0.001 to 0.1 have on model accuracy?

◉

Accuracy took a hit, as the model overshot the minimum of the loss function.

○

Accuracy significantly increased due to faster learning.

○

No noticeable change in accuracy, indicating resilience to learning rate variations.

⋮⋮

Question 2 1 pts

How did reducing just the batch size from 64 to 16 affect accuracy and model training time?

○

Accuracy significantly improved due to more frequent updates and better generalization.

○

Accuracy dropped significantly because of increased noise in the gradient estimates.

◉

No significant effect on accuracy with this data and the other hyperparameter settings, but model training time increased.

⋮⋮

Question 3 1 pts

What was the impact on model accuracy when the number of epochs was increased from 5 to 20?

○

Accuracy significantly improved due to more frequent updates and better generalization.

◉

No significant effect on accuracy with this data and the other hyperparameter settings, but training time increased significantly.

○

Accuracy dropped significantly because of increased noise in the gradient estimates.

⠿

Question 4 1 pts

How did changing just the dropout rate from 0.2 to 0.95 affect the model's performance?

○

No change in accuracy, indicating the model's insensitivity to this level of dropout.

○

Accuracy improved as the model became more robust to overfitting.

◉

Accuracy declined due to excessive regularization, leading to underfitting.

⠿

Question 5 1 pts

What happened to the model accuracy when just the hidden layer size was first halved from 64 to 32 and then doubled from 64 to 128?

○

Accuracy first decreased, as the model was able to capture less complex features of the data, and then improved, as the model learned more complexity.

◉

No noticeable change in accuracy occurred, but training times were impacted -- decreasing in the first case and increasing in the second.

○

Accuracy first improved, as the model was able to capture more complex features of the data, and then declined, as the model learned less complexity.

⠿

Question 6 1 pts

What was the observed effect on accuracy when the learning rate was increased first to 0.01 and then to 0.1 while the number of epochs was also increased to 20 and 40, respectively?

○

Despite the negative effect of increasing the learning rate, the day was saved by the increase in epochs, which resulted in increased accuracy.

◉

The negative impact (reduced accuracy) of increasing the learning rate could not be compensated against by increasing the number of epochs, for this dataset and the given hyperparameter settings.

○

The learning rate change and the change in epochs canceled each other out, leaving accuracy mostly unchanged.

⠿

Question 7 1 pts

What was the observed effect on accuracy when the batch size increased from 32 to 128 to 256 while the size of the hidden layer went from 64 to 256 to 512, respectively?

○
Accuracy decreased in both cases..

○
No discernible change was observed with either accuracy or training time.

◉
Accuracy increased in both cases, but what's more noteworthy is that training time was significantly reduced both times as compared to that with the default hyperparameter settings.

⁞

Question 8 1 pts

What happened when the number of epochs was dropped to 2 while the batch size was first left untouched and then increased to 1024?

○
Accuracy was severely hurt by the reduction in epochs, but significantly increasing the batch size helped a great deal and counteracted the loss in accuracy by a lot, bringing it back up quite close to the original value.

○
The change in epochs had no impact.

◉
Accuracy was severely hurt by the reduction in epochs, and the change in the batch size didn't help in any way.

⁞

Question 9 1 pts

Why did making significant increases to the batch size and the hidden layer size while also doubling the number of epochs not increase accuracy and actually hurt accuracy as compared to that with the default hyperparameter settings?

○
The model, without any reasonable doubt, underfitted.

◉
The model likely started to overfit due to learning much more complexity or due to overtraining (too many epochs) or both. Alternatively, the large batch size could have led to underfitting, but the case for overfitting seems more plausible.

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