10/31/2023

MET CS 767 Assignment 2: Neural Nets Intro

*Please replace this with your name*

The purpose of this exercise is to give you practice with standard neural net implementations and their parameters. Architecture and parameter manipulation are essential elements of neural net application. We typically start with an existing implementation when we can.

## Please use this Word file template for your response. Follow—and retain—these instructions in gray text. Insert your work in black where indicated. Keep in mind the evaluation matrix below as you do the work and use it to guide what you submit. It is recommended that you complete this assignment with the assistance of an AI generator such as ChatGPT, and the assignments are designed to assume this. Your work will be assessed in terms of your *value added* to existing or generated material, as per the evaluation matrix at the end. You will describe your value added in the format provided by this Word template. Your description consists of your prompts together with you edits and additions to AI-generated material. You are not *obliged* to used AI generation, however, in which case please indicate this whereever requested in this template.

You may build on the application you selected in Assignment 1 if you wish.

Use no more than 6 pages of 12-point text excluding figures, the instructions in gray, your AI generator descriptions, and appendices. You can add as many appendices as you like for voluminous material, as per the instructions provided in the first appendix below. It will be read on an as-needed basis.

You may build on the work of others but (1) show clearly that you understand this work and (2) observe all plagiarism rules scrupulously, including clear citations. Use the Reference section at the end.

**Hints**:

* Be organized in your parameter value process; keep track of results as you go.
* For parameter optimization, consider using a binary process (halving and doubling)—explained in live classroom—to identify appropriate parameter values.
* Keep in mind that chatGPT can be an excellent tutor.
* You can’t share your solution, of course, but if you locate a useful website (e.g., to modify a data set), share it with the class. You will benefit from what they share with you.
* Tailor your response to the evaluation criteria (at the end of this) as you respond.
* Leave ample time to edit your work. It is a pity when you do lots of good work but that work is obscured in your submission.

# How I modified data and/or code to attempt improvement

Copy the implementation [here](https://colab.research.google.com/drive/1TI76Pg5RYmlA0sTNthkqDhTjZWfIoZwn?usp=sharing) to your Google drive. Modify this code, attempting to improve the output, and report the results, (using this Word file as a template as below). Since the accuracy of the given implementation is already high, consider reducing the size of the MNIST training set—or using a set like [mnistcorrupted](https://www.tensorflow.org/datasets/catalog/mnist_corrupted)—so that the baseline implementation leaves more room for percentage improvement. (The application is bound to be less effective with fewer data.) If necessary, show changes that make the result worse, with your best explanation.

## 1.1 Description of what you did and reason(s) it could be an improvement (include the relevant code fragments)

your response replaces this

## 1.2 Comparison of the result with the original output

your response replaces this

## 1.3 URL of your Colab code

your response replaces this

### >>AI generation for section 1 (or check: I did not use AI generation here \_\_). Please collapse this section before submitting.

1. PARAGRAPH DESCRIBING YOUR VALUE ADDED TO AI-GENERATED MATERIAL
2. Your response replaces this.
3. YOUR PROMPT SEQUENCE
4. [1] Your first prompt replaces this.
5. [2]
6. Your response replaces this.

# New application

## 2.1 Description of the application (include description of inputs, functionality, and outputs—in no more than ½ page. Identify a clearly obtainable data source.)

your response replaces this

## 2.2 Three illustrative input/output pairs from running the implementation

your response replaces this

## 2.3 Key code snippets, with explanation (the important code—in no more than a page)

your response replaces this

## 2.4 URL of your code (Colab code--or attach and explain how to run if necessary)

your response replaces this

### >>AI generation for section 2 (or check: I did not use AI generation here \_\_). Please collapse this section before submitting.

1. PARAGRAPH DESCRIBING YOUR VALUE ADDED TO AI-GENERATED MATERIAL
2. Your response replaces this.
3. YOUR PROMPT SEQUENCE
4. [1] Your first prompt replaces this.
5. [2]
6. Your response replaces this.

# References

You are welcome to use the work of others—but only if you clearly indicate what work is theirs. Failure to do so is plagiarism. Each of your references should occur within the text; so for example [1] should occur below *and* within the body of your response at the relevant location. Include specific sections of the textbooks if used directly.

[1] your first reference replaces this

[2] …

# Evaluation

## 



# Appendix 1

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# Appendix 2

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