Peer-review – TNM112
Deep learning for media technology, Lab 1

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1 Introduction

The report details Lab 1 , focusing on the Multi Layer Perceptron (MLP) in deep learning. It includes three tasks examining MLP parameters, model evaluation, and manual weight and bias adjustments for decision boundaries. Keras is utilized for MLP training, custom feedforward and evaluation functions, and explores weight initialization and optimization techniques. The report highlights the impact of batch sizes on accuracy, the suitability of ReLU for non-linear data, and the effectiveness of glorot normal initialization and Adam optimizer.

2 Review

For each topic, i have formulated some strengths that i can see and some feedback on what i think could be improved.

Overall structure

The report is divided into clear sections such as Abstract, Introduction, Background, Tasks, Results, Conclusion, and References, which helps in navigating through the content. Each task is broken down into subtasks with detailed explanations, making it easier to follow the progression of the experiment. However the background could be shorter and split up into a method section instead. The report covers the theory, implementation, and results, in great detail. To enhance readability, consider adding visual elements like charts or graphs to represent data and results for the task that might benefit from figures. Additionally, a table of contents at the beginning could further improve navigation.

Method

As previously mentioned the report is missing a "method" section, rather the method is described in the background section. The method for task 1 is described well and in detail. For task 2 the method is also described in great detail however it could be interesting to see a code block for the feedforward() function instead of the activation function since that code is quite straight forward.

Results

The results are well presented and the cause and effect of the results is well laid out and explained. However some results could benefit from a figure showing the loss and accuracy, in some cases it could better illustrate if a model is overfitting or not. For task 2, results are missing, a table with accuracy and loss compared to the keras model would be beneficial to be able to compare the two models.

Clarity

The explanations of the results are very well formulated and the reader gets a good understanding of how the writer got certain results. The method is also well explained and easy to follow.

Coverage

The report provides a explanation of the Multi Layer Perceptron (MLP), including its structure and how it functions with weights, biases, and activation functions. The report discusses the backpropagation algorithm and Stochastic Gradient Descent (SGD), essential for training MLPs. It includes practical tasks that explore different parameters and their effects on the MLP's performance, as well as custom implementations of functions like feedforward and evaluate. There's a section on manually setting weights and biases to create a decision border, which helps in understanding the classifier's decision-making process. Results are also well documented and explained. Conclusion could be further improved by including conclusions related to the results achieved in the lab.

3 Conclusion

The report effectively explains the Multi Layer Perceptron (MLP) concepts, Its clear structure aids navigation, although improvements like visual aids and segregating the background into a separate method section could enhance readability. The method descriptions for tasks are detailed, yet adding a code block for the feedforward() function in task 2 would support clarity. While the results are well presented, integrating figures for better illustration, especially to depict overfitting or model comparison, would improve understanding. The report is clear in the MLP aspects, from structure to training algorithms like backpropagation and SGD. However, expanding the conclusion to include specific result-based insights would further improve its completeness.

In summary, while the report excels in covering MLP concepts and experiments, incorporating visuals, refining organization, and expanding the conclusion's result-oriented insights would improve its overall quality.