

Assignment 3

Problem 1: Implement a convolutional neural network with a spatial attention mechanism to classify the MNIST dataset. Compare its performance to a standard convolutional neural network without attention. How does the attention mechanism impact the network's accuracy and training time?

Problem 2: resolve problem 4 in assignment 2 using an attention mechanism using CNN with spectrogram images for the given speech data. Compare its performance to a standard convolutional neural network without attention. What is the impact of the attention mechanism in this case on the network's accuracy and training time?

For each problem, you should provide:

- a detailed report on your experimental setup, including the architecture of the neural network, the training procedure, and the hyperparameters used. You should also include a thorough analysis of your results, discussing the impact of the attention mechanism on the network's performance and any insights gained from your experiments.
- Finally, you should include suggestions for future work, such as alternative attention mechanisms or ways to improve the network's performance.