

ADVANCED MACHINE LEARNING ASSIGNMENT 2 REPORT

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INTRODUCTION

We will compare the performance of SIX different neural network models on the IMDB dataset in this report. Their accuracy and loss values are used to evaluate them.

CONTENT

On the IMDB dataset, we trained and tested SIX different neural network models in different configurations. Those same combinations differ in terms of the number of hidden units, hidden nodes, transfer function, and wavelet transform, as shown below.

MODELS 1

1. NODES=16
2. OPTIMIZER = rmsprop
3. LOSS FUNCTION= Binary Cross entropy
4. LOSS = 0.2947
5. ACCURACY- 88.21%

MODELS 2

1. NODES = 64
2. OPTIMISER = rmsprop
3. LOSS FUNCTION = MSE
4. LOSS= 0.0840
5. ACCURACY = 88.75%

MODEL 3

1. NODES= 64
2. OPTIMISER= rmsprop
3. LOSS FUNCTION = Binary cross entropy
4. LOSS = 0.2904
5. ACCURACY = 88.77%

MODEL 4

1. NODES = 32
2. OPTIMISER = Adam
3. LOSS FUNCTION = MSE
4. LOSS = 0.0850
5. ACCURACY = 88.53%

MODEL 5

1. NODES = 16
2. OPTIMISER = rmsprop
3. LOSS FUNCTION = Binary cross entropy
4. LOSS = 0.3090
5. ACCURACY = 88.62%

MODEL 6

1. NODES = 16
2. OPTIMISER = rmsprop
3. LOSS FUNCTION = Binary cross entropy
4. LOSS = 0.2937
5. ACCURACY = 88.72%

As we can see from the above information , the model has different levels of accuracy . Model 3 has the highest accuracy of 88.77% . Model 1 has the lowest accuracy with 88.21% accuracy. While Model 2 has the lowest loss with 0.0840 and Model 5 has the highest loss of 0.3090.

By this information , we can say that the best performance model is Model 3 . This model has 2 hidden layers and 16 nodes per layer. It has been done with the rmsprop optimizer and binary cross entropy loss function with an accuracy of 88.77%

Model 6 has also acquired good accuracy of 88.72% slightly lower than the Model 3 , expect that it used fewer nodes per layer that is 16 instead of 64.

CONCLUSION

Overall, our study highlights the importance of carefully selecting the architecture, activation functions, and hyperparameters of a neural network, as these choices can significantly impact the performance of the model on a given task.