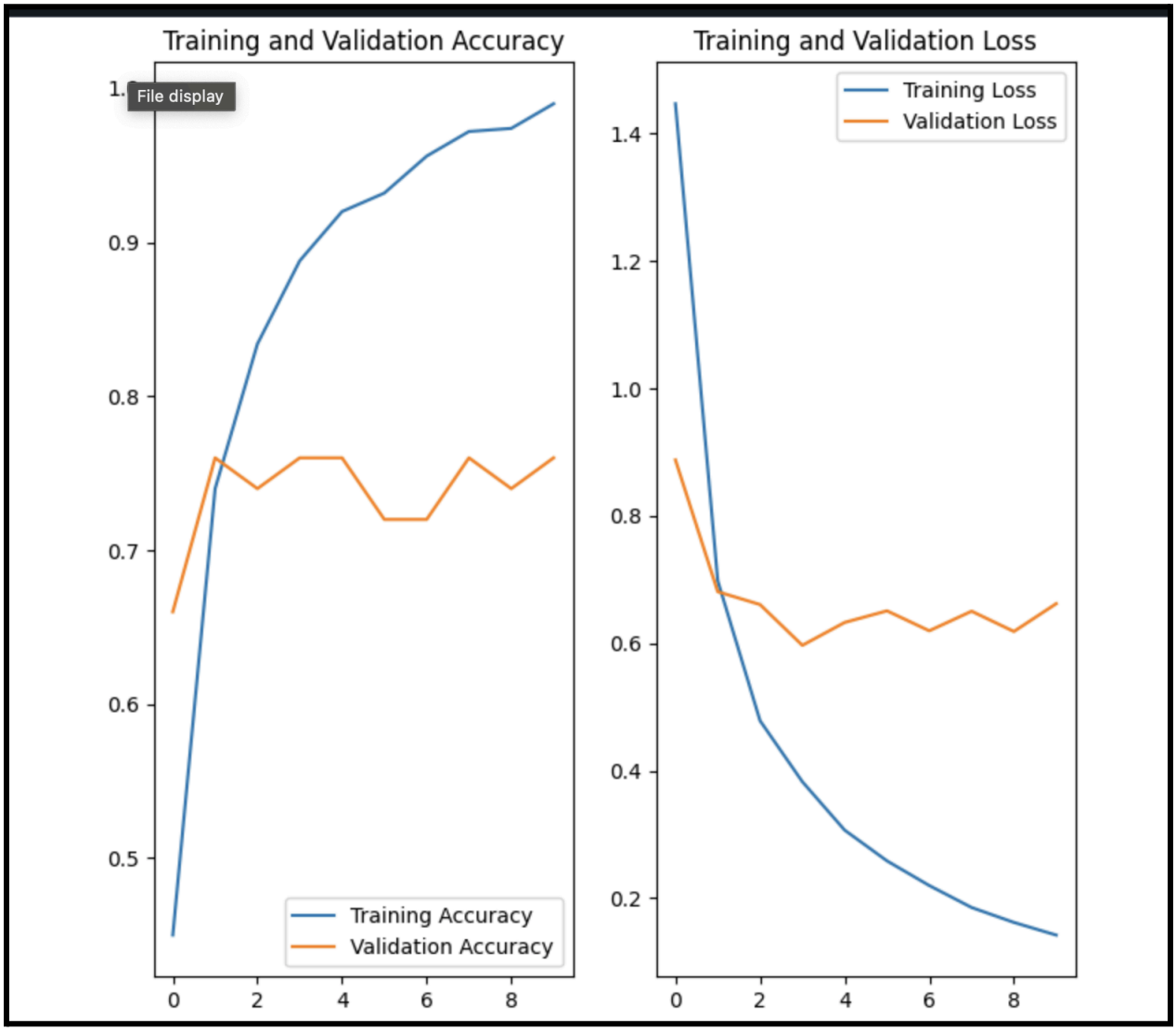
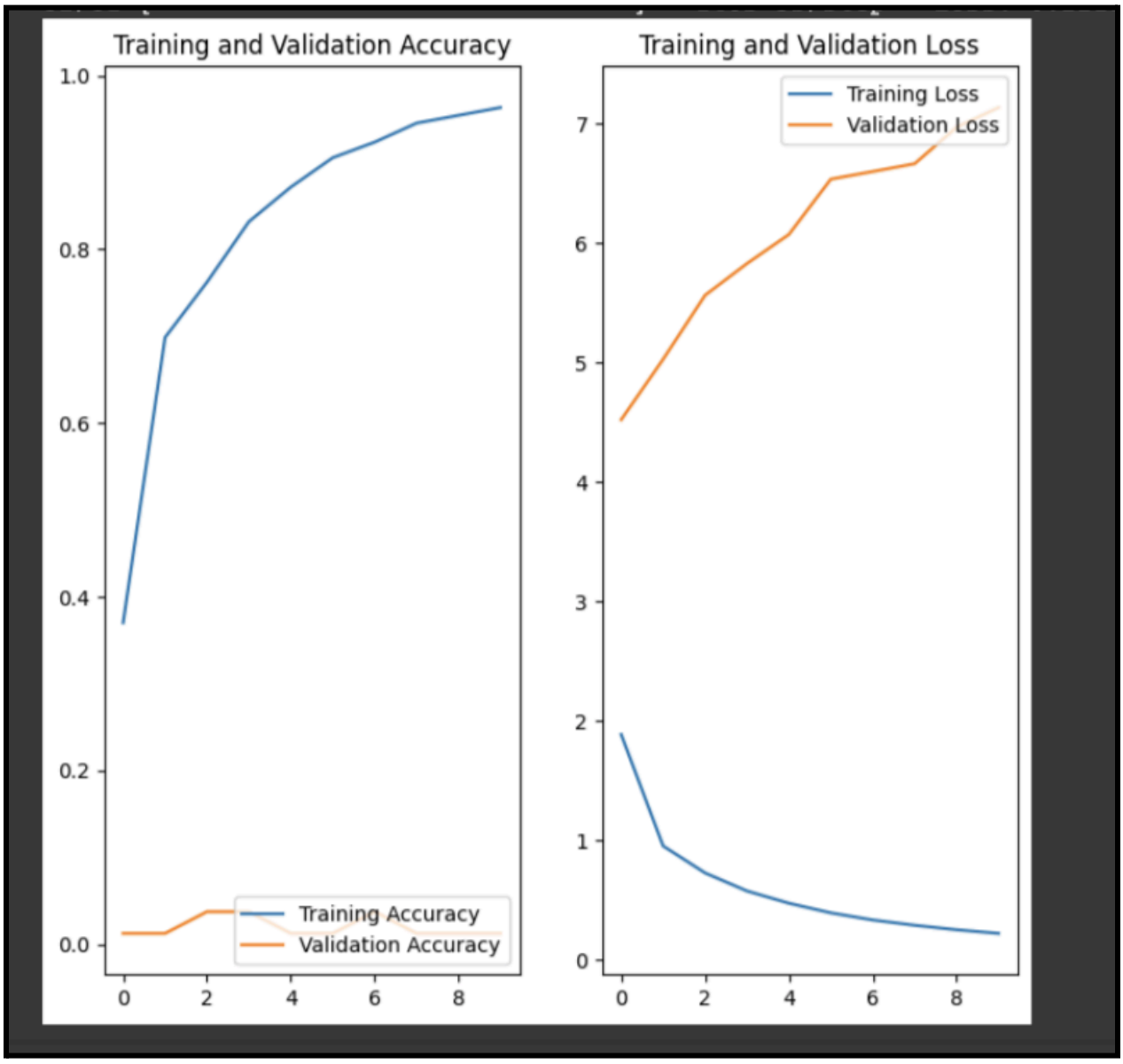
Report on Accuracy and Loss depending on the amount of classes that I assessed

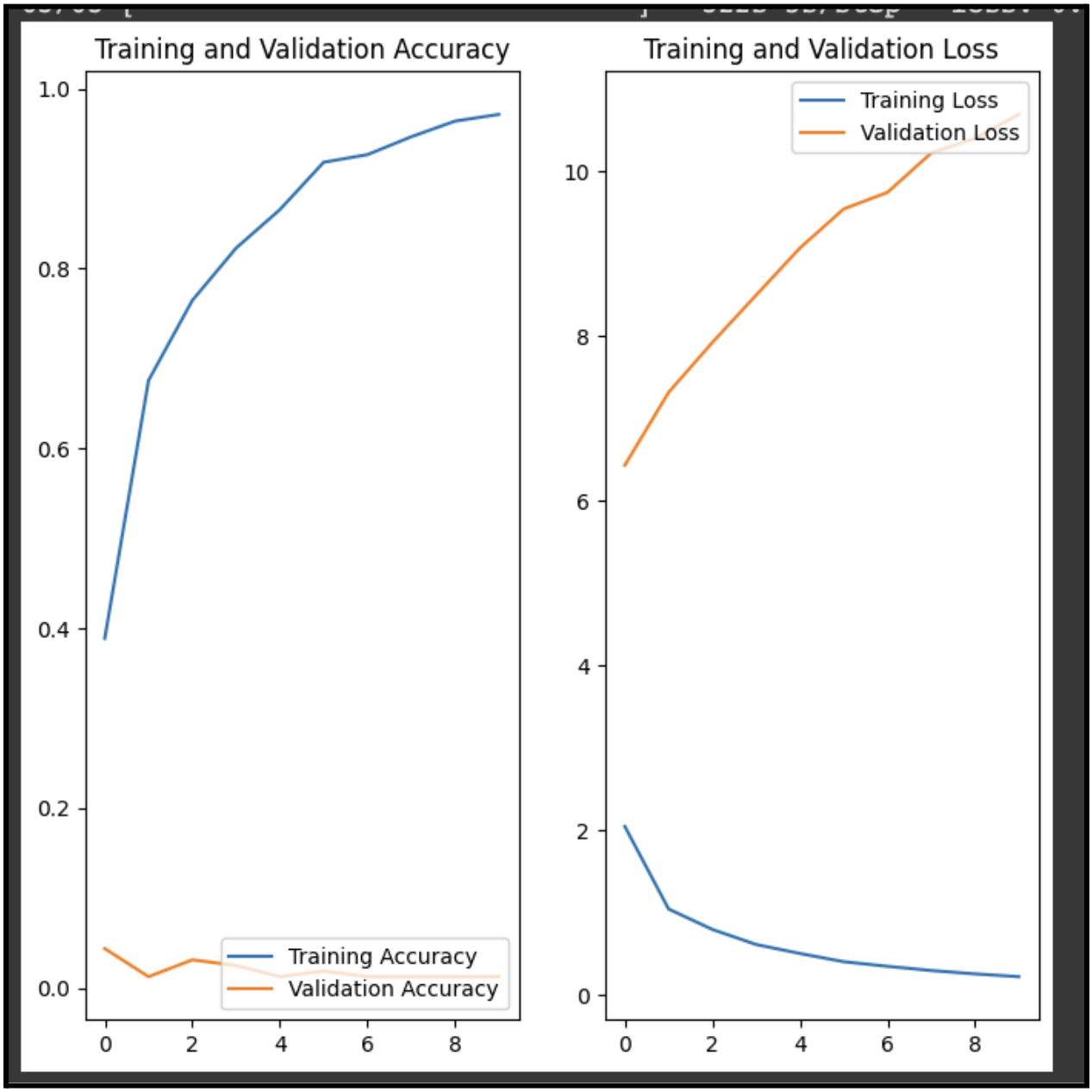
5 classes:



10 classes:


Training and Validation Accuracy
1.0
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
Training Accuracy
Validation Accuracy
Training and Validation Loss
7
6
5
4
3
2
1
0
0
2
4
6
8
Training Loss
Validation Loss

20 classes:


Training and Validation Accuracy
1.0
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
Training Accuracy
Validation Accuracy
Training and Validation Loss
10
8
6
4
2
0
0
2
4
6
8
Training Loss
Validation Loss

Summary

- **Training Accuracy:** All models show rapid increases in training accuracy, but the peak accuracy slightly decreases as the number of classes increases.
- **Validation Accuracy:** The validation accuracy is highest and most stable for the 5-class model and decreases with increased class count. The fluctuations and lower values for the 10-class and 20-class models indicate challenges in generalizing.
- **Training Loss:** The training loss decreases in all models, with lower final values in the models with fewer classes.
- **Validation Loss:** The validation loss is lowest and most stable for the 5-class model. For the 10-class and 20-class models, it changes and increases, meaning overfitting and the difficulty of the task.

Conclusion

Increasing the number of classes in an image classification task makes it more challenging for the model to generalize well. As the number of classes increases, the model tends to overfit the training data while struggling with the validation data, as evidenced by fluctuating validation accuracy and increasing validation loss. This highlights the need for more sophisticated techniques such as regularization, data augmentation, or models to handle larger class counts effectively.