

# **STA437: Project presentation**

Joël Meili

# Agenda

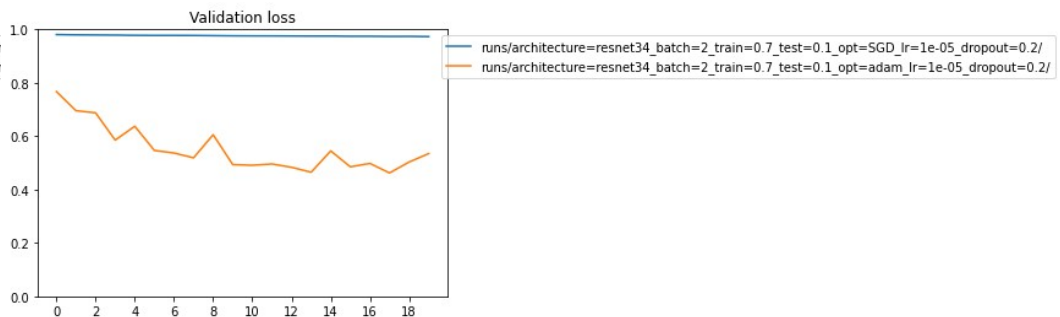
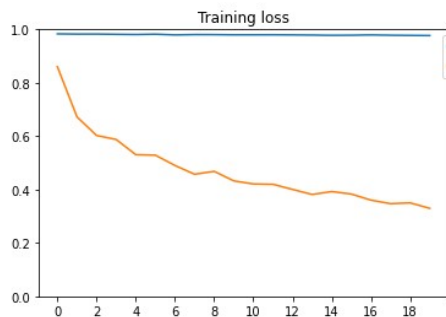
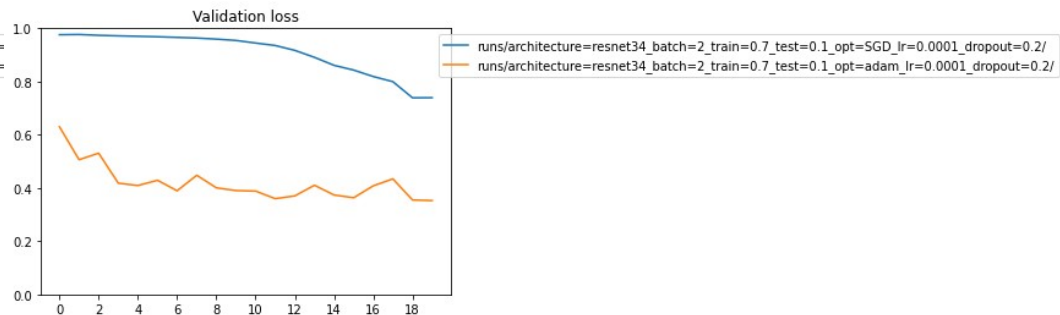
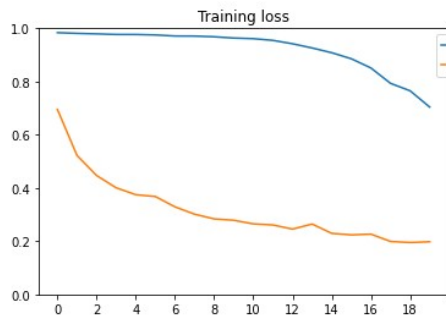
- **Data set**
- **Comparisons between hyper parameters**
  - two different learning rates
  - Batch normalization wasn't possible for the model I chose (FPN, realized it too late in the process)
  - two different training splits
  - two different drop out rates
  - two different architectures
  - two different optimizers
  - unfortunately, I wasn't able to test data augmentation on this version due to time reasons
- **Model inference on the best overall model**
  - the best model has 23149121 parameters that were estimated
- **Code availability**

# Data set

- The data set consists out of 199 chest CT volumes of patients with positive RT-PCR for SARS-CoV2
- The goal of the data set is to annotate lesions in the lung CT
- The data can be found here: <https://covid-segmentation.grand-challenge.org/>

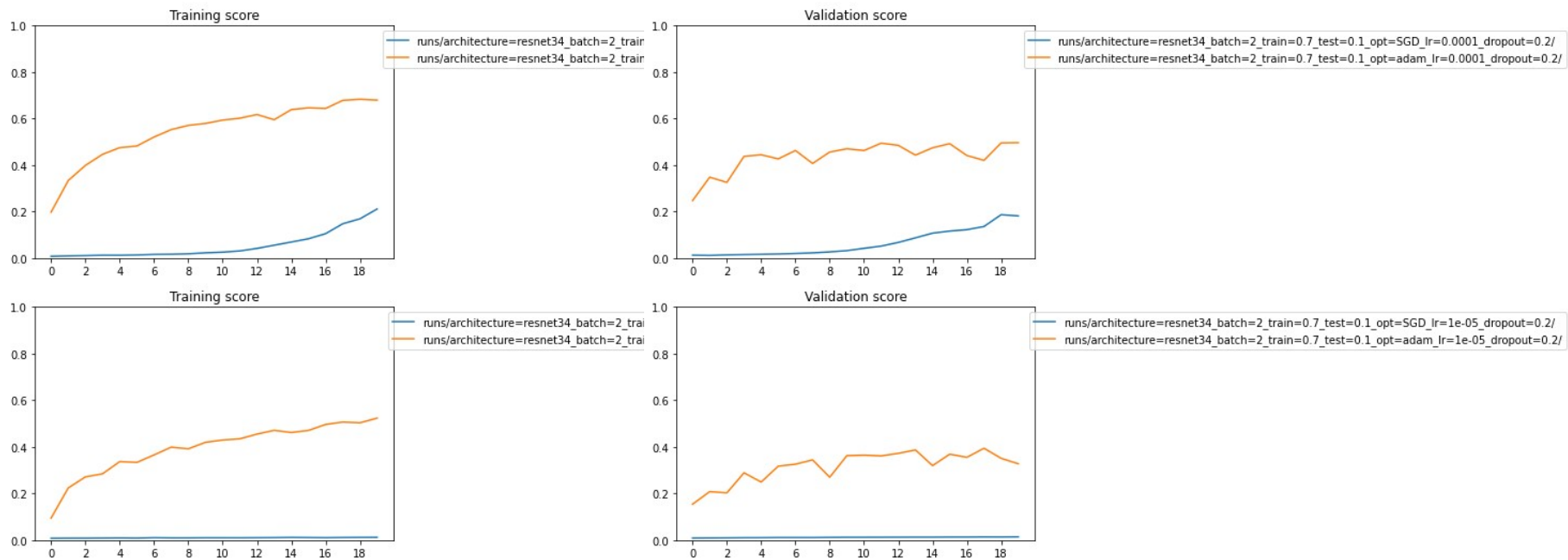
# Comparisons between hyper parameters

- Comparing the training and validation losses for the two optimizers for different learning rates: Adam and SGD
- Based on the figures it seems that Adam provides more stable losses with different learning rates compared to SGD



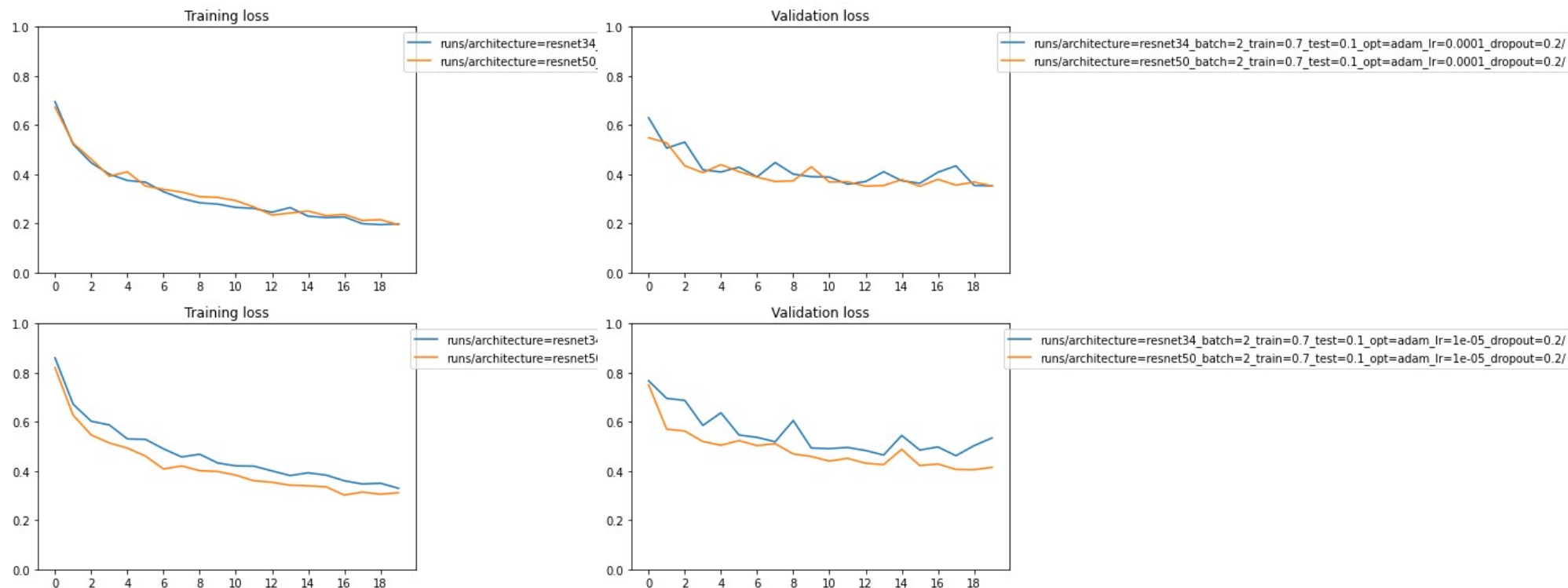
# Comparisons between hyper parameters

- Comparing the training and validation scores for the two optimizers for different learning rates: Adam and SGD
- Based on the figure Adam had better overall IoU scores



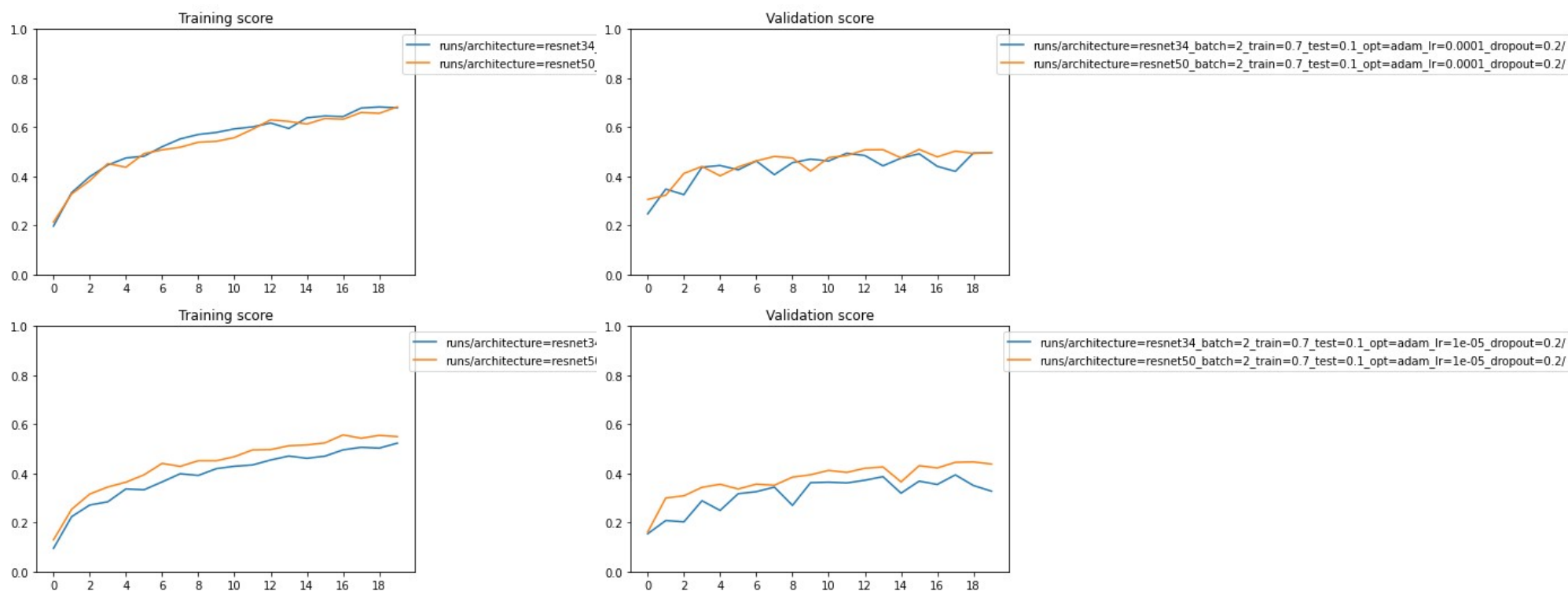
# Comparisons between hyper parameters

- Comparing the training and validation losses for the two architectures for different learning rates: resnet34 and resnet50



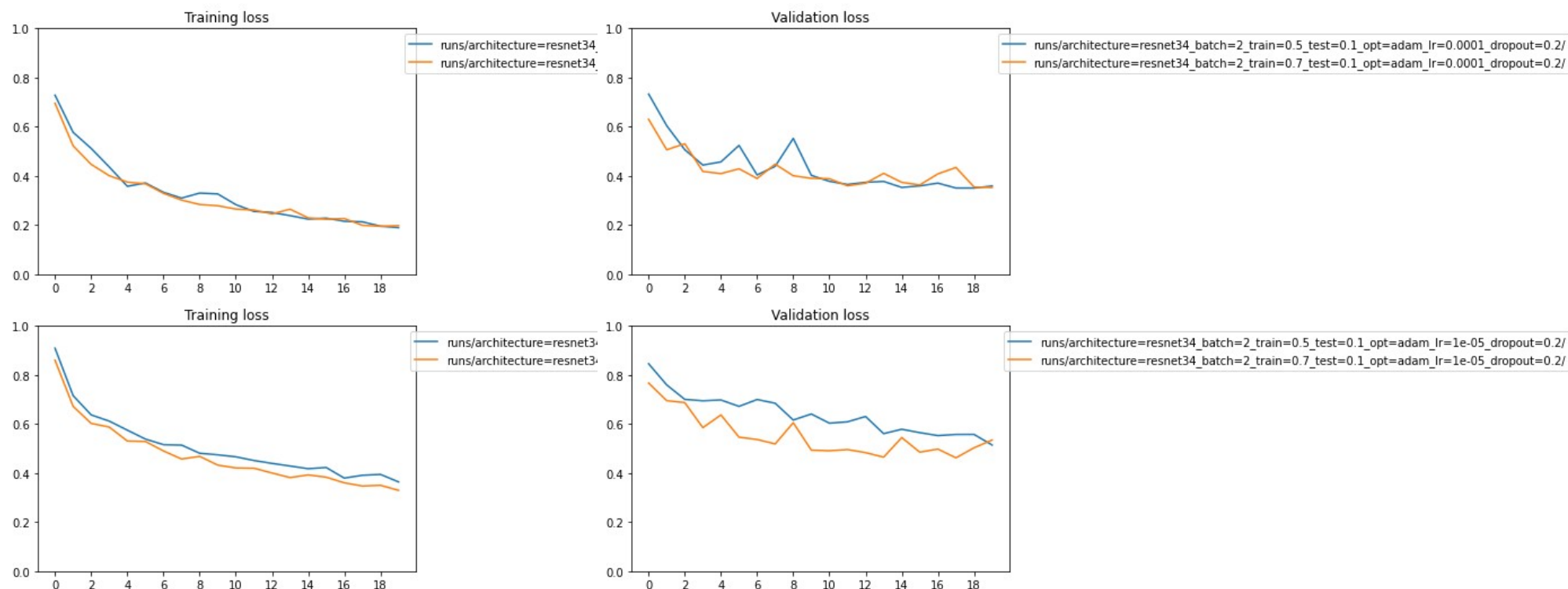
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# Comparisons between hyper parameters

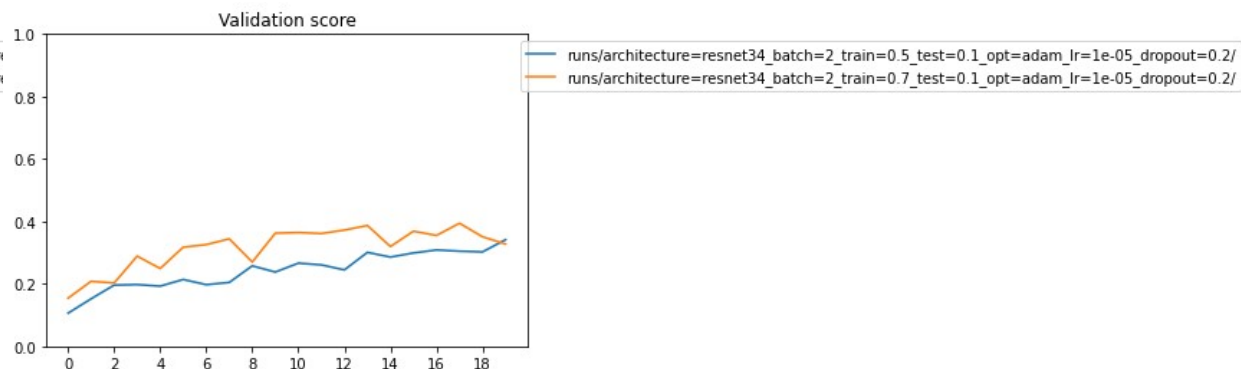
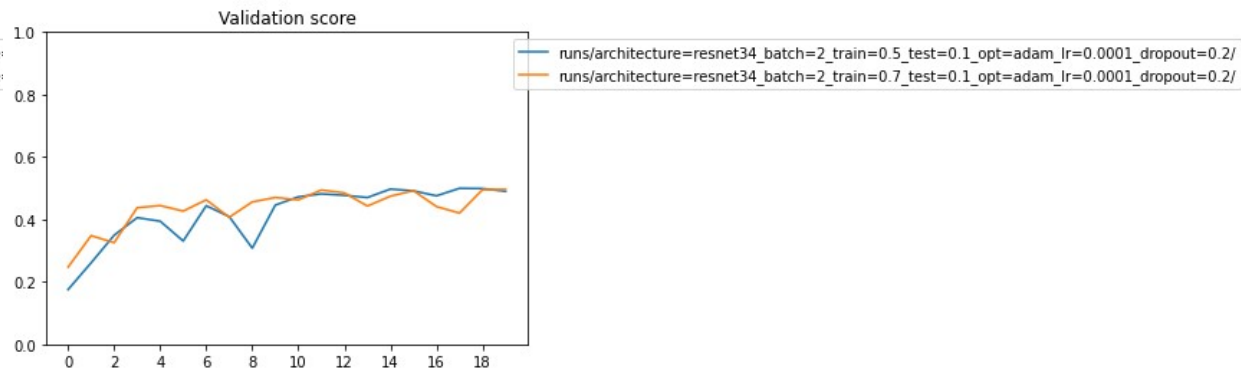
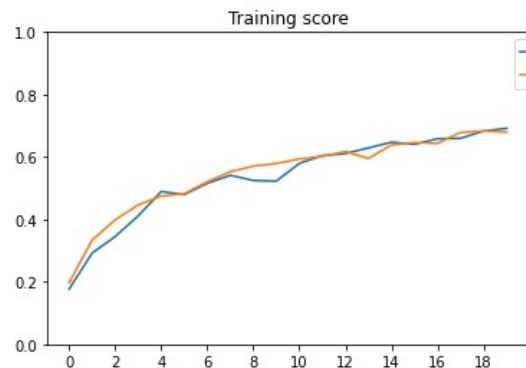
- Comparing the training and validation losses for the two training splits: 0.5 and 0.7





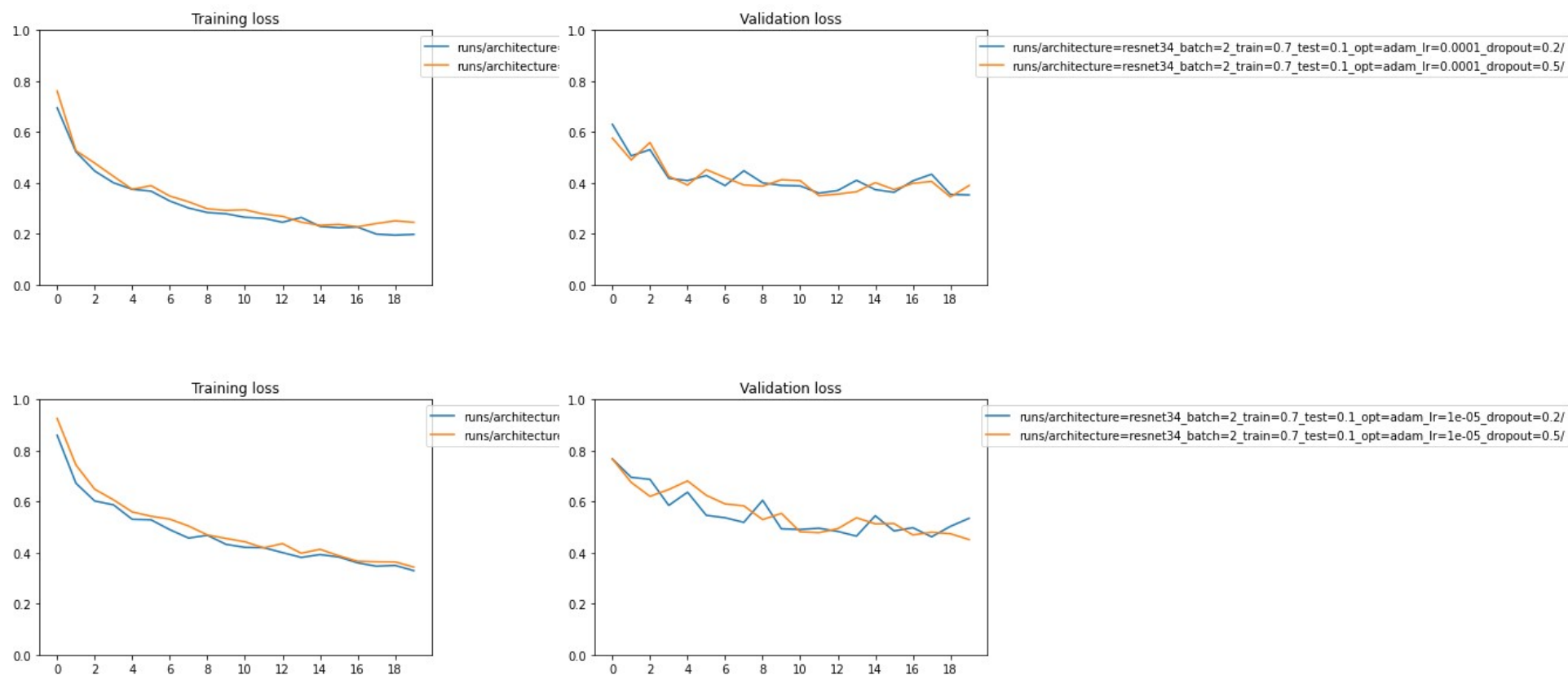
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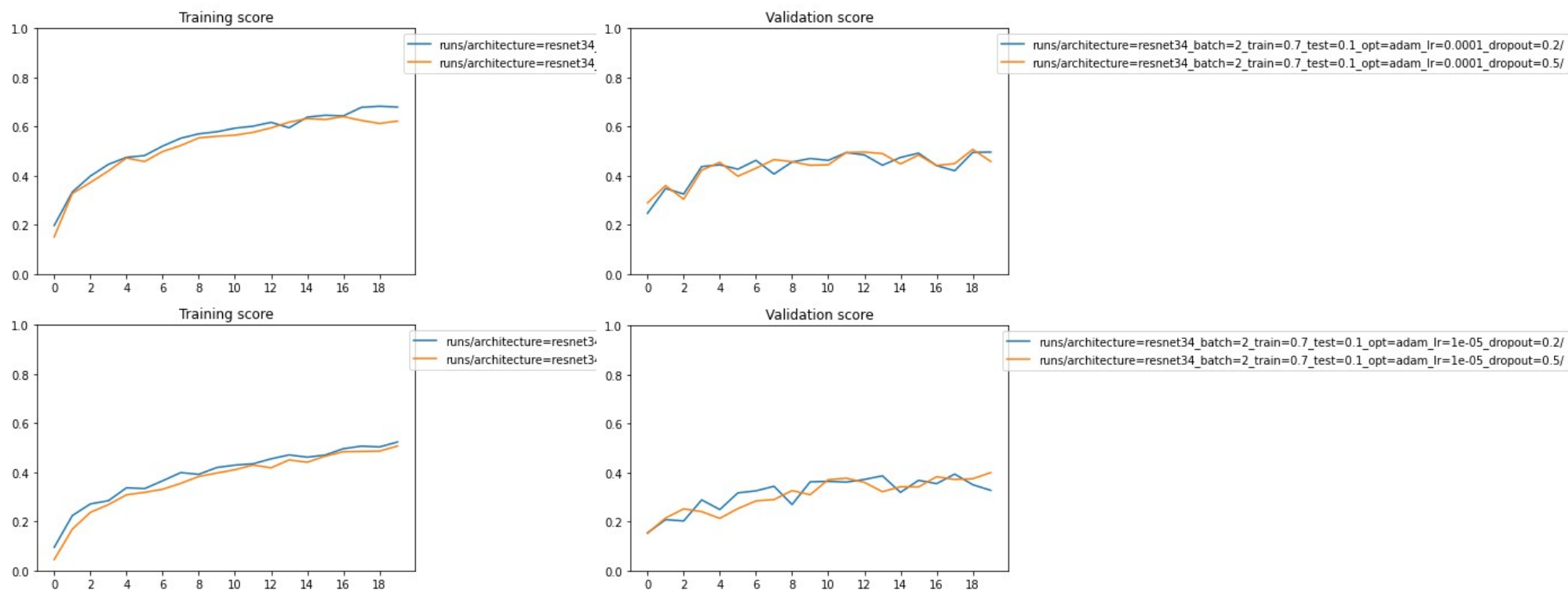
# Comparisons between hyper parameters

- Comparing the training and validation losses for the two dropout rates: 0.2 and 0.5

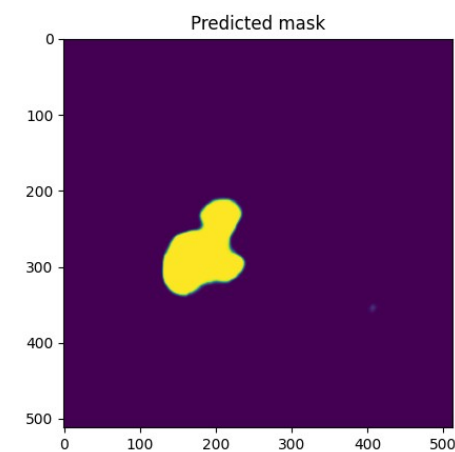
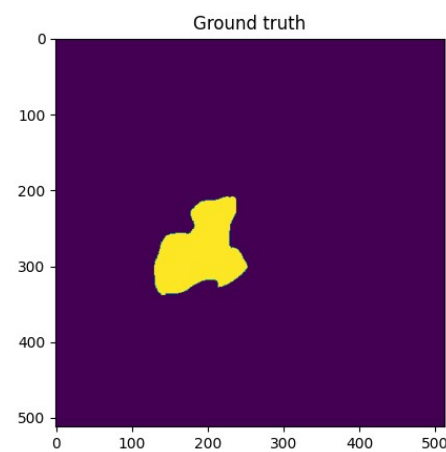
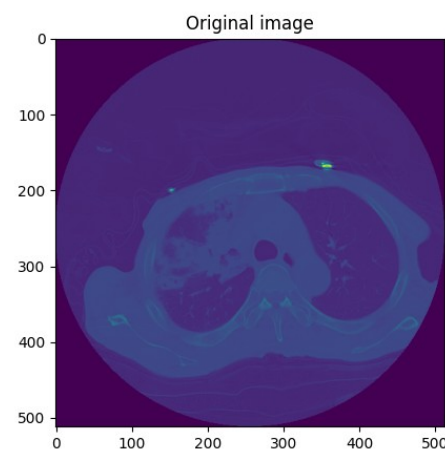
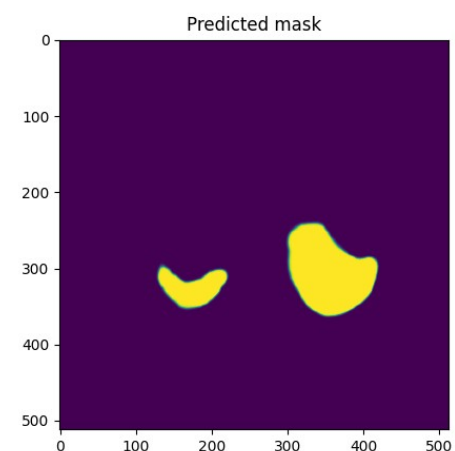
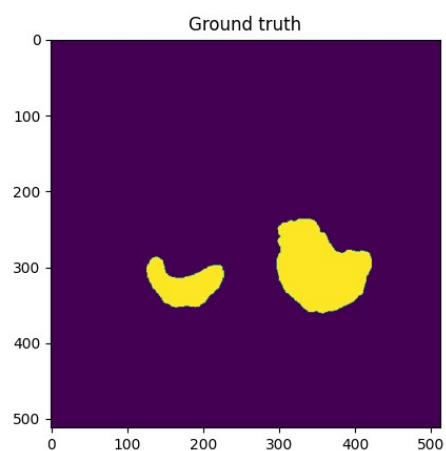
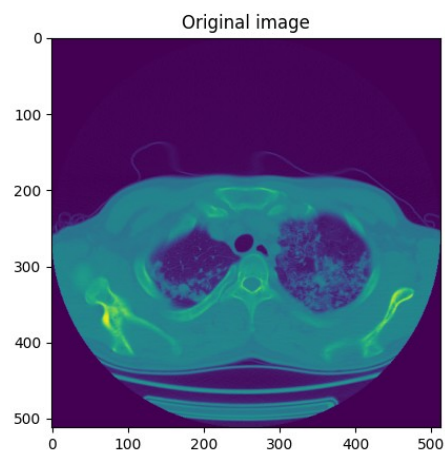


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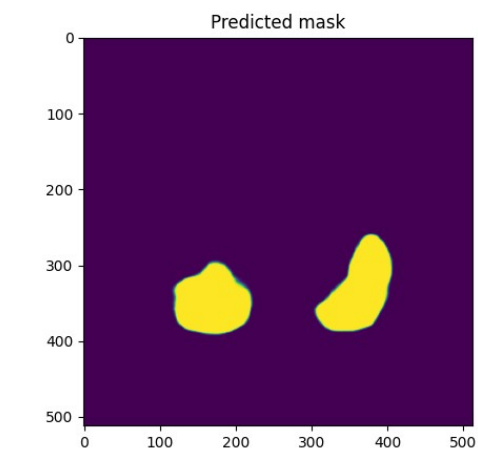
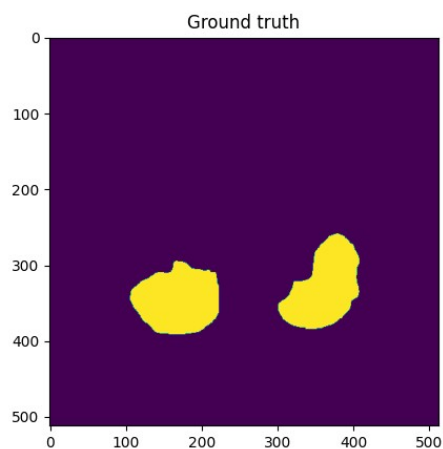
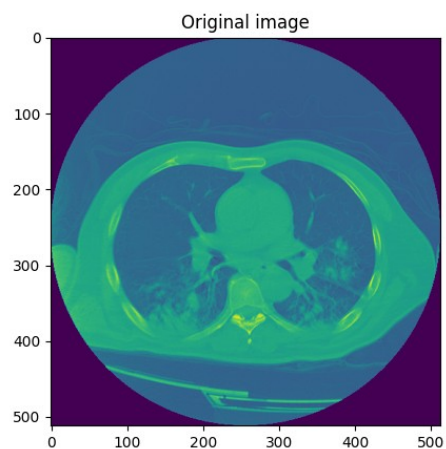
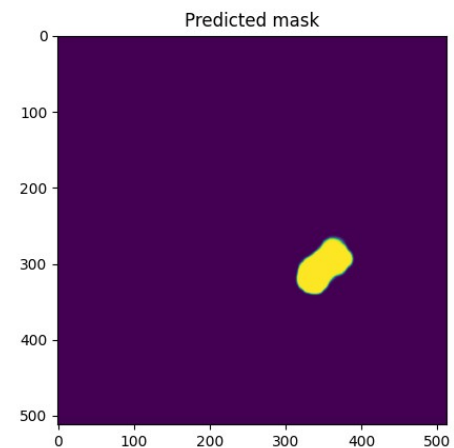
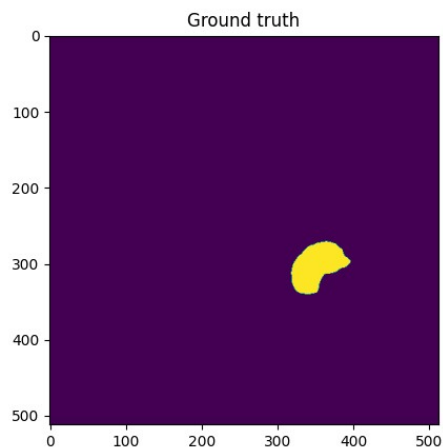
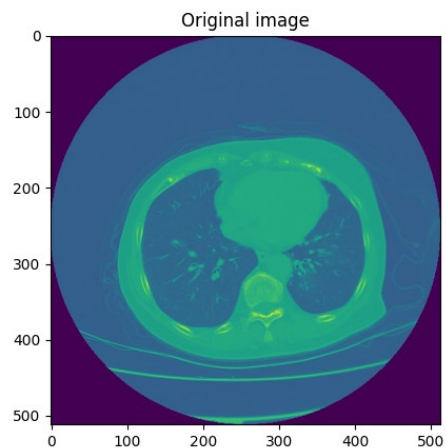
- Comparing the training and validation scores for the two dropout rates: 0.2 and 0.5



# Model inference

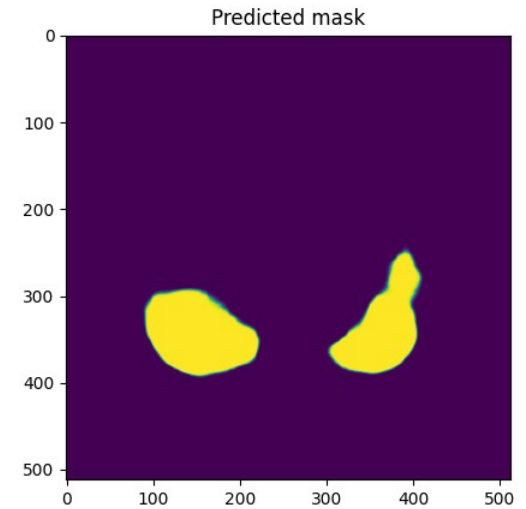
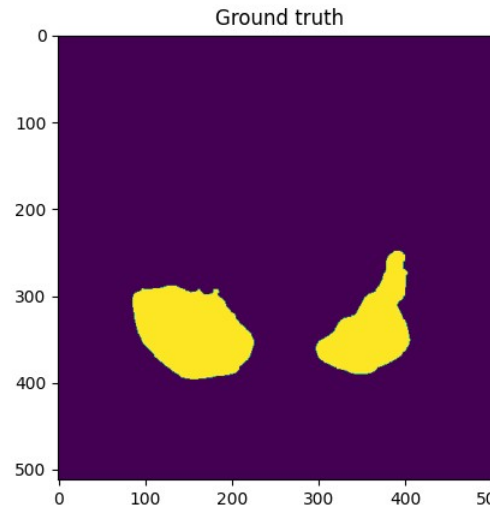
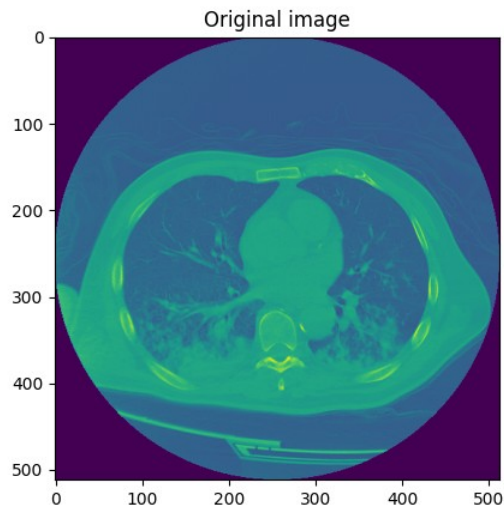


# Model inference



# Model inference

- all of the five best model predictions out of the test set had around 0.85 IoU score



# Code availability

- The source code is available in this Github repository: <https://github.com/joelmeili/STA437/>