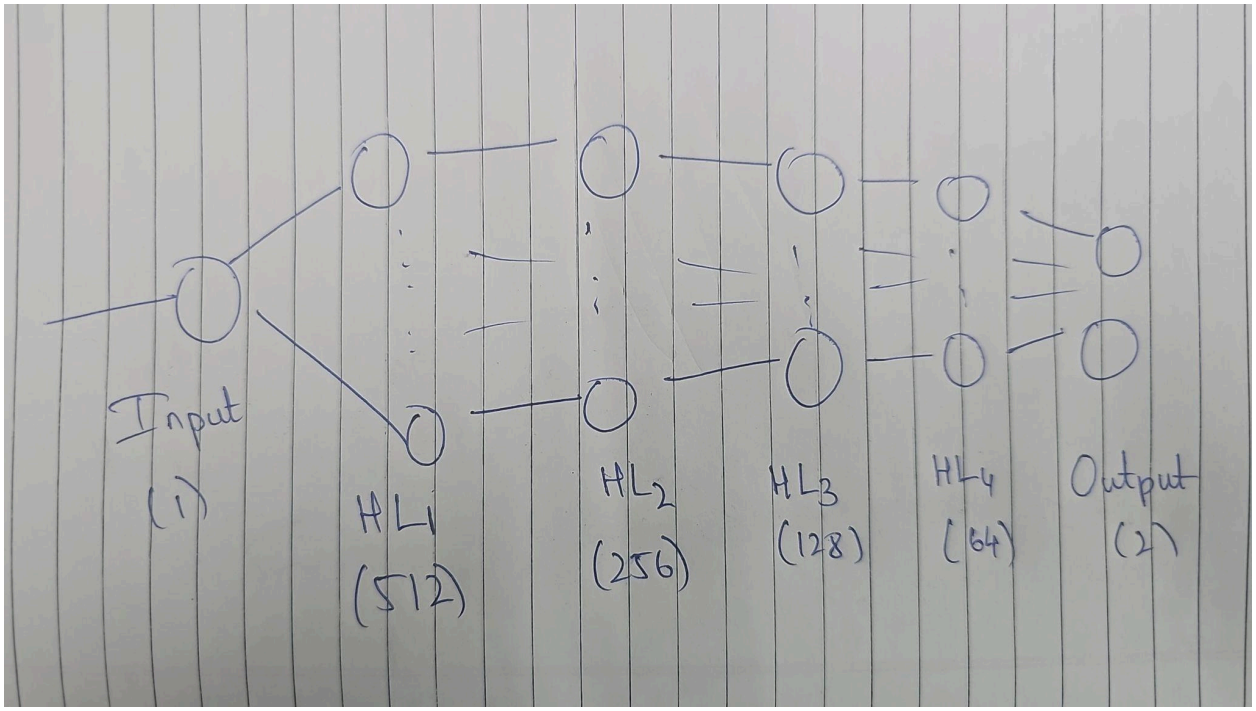
CS 203 Software Tools and Techniques for AI

Group: 12
Name: Harinarayan J (23110128) , Vyomika Vasireddy (23110363)

Github Repository: https://github.com/HarinarayanJ/CS203-Lab7

MLP Architecture

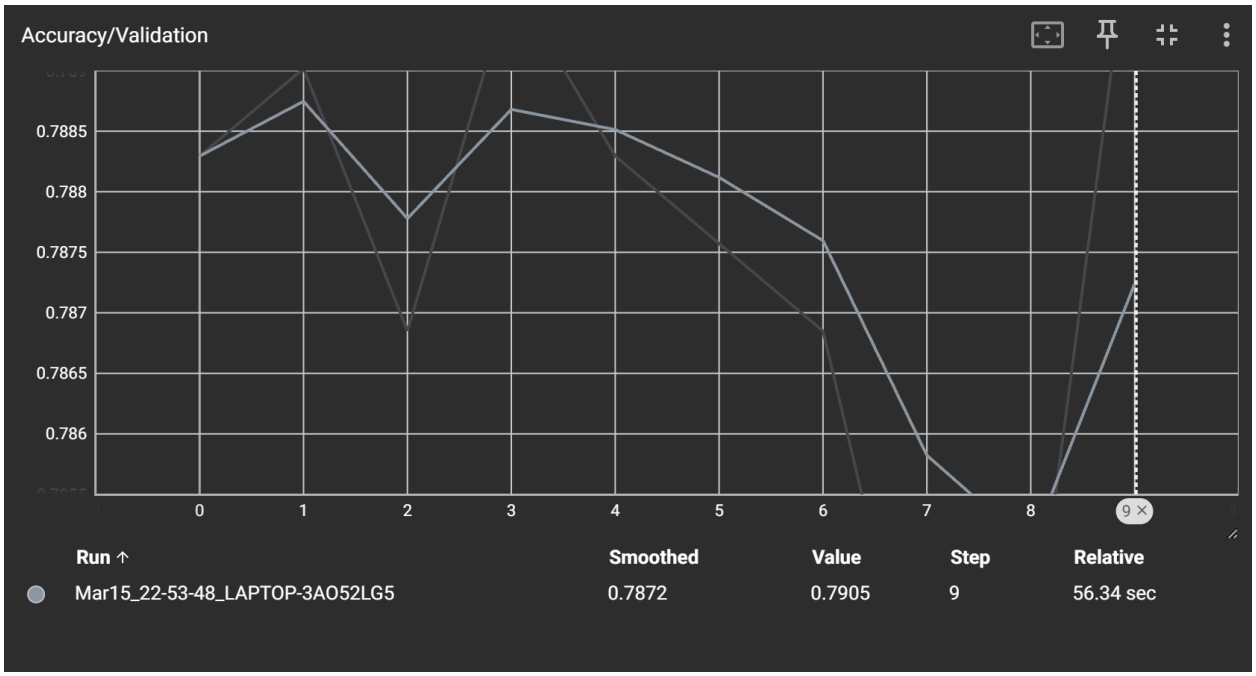


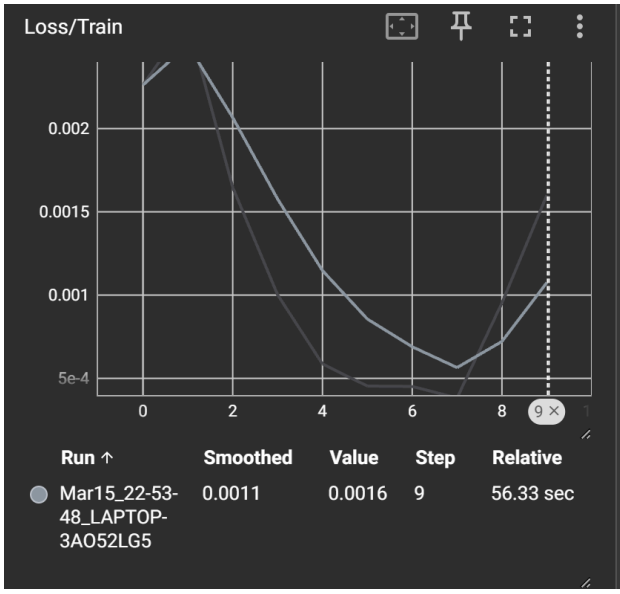
Hyperparameters

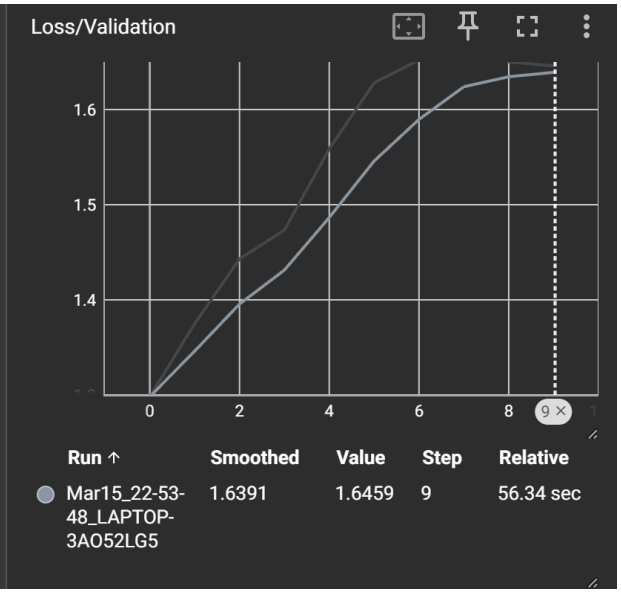
Epochs: 10, Learning Rate = 0.001

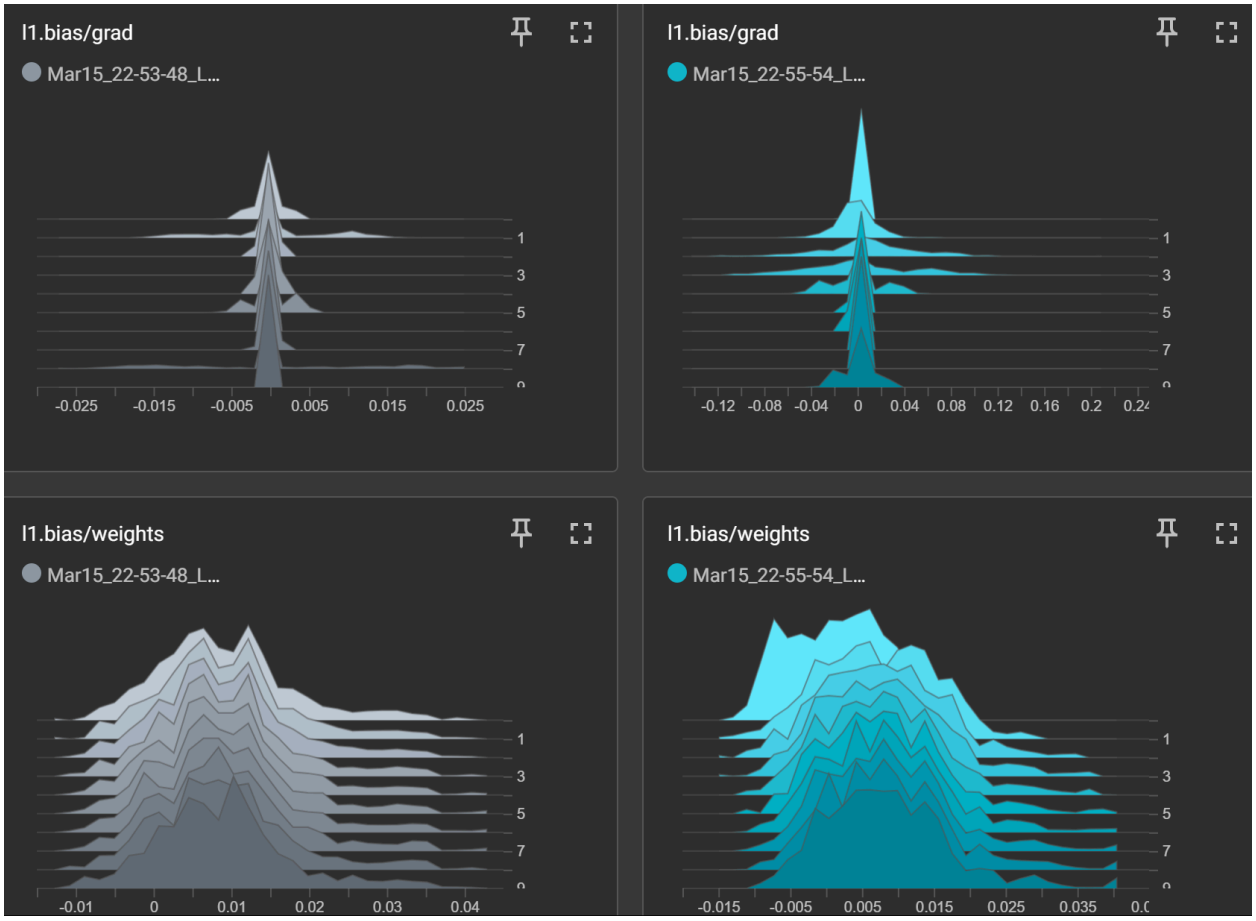
Logged Metrics

Model - 1

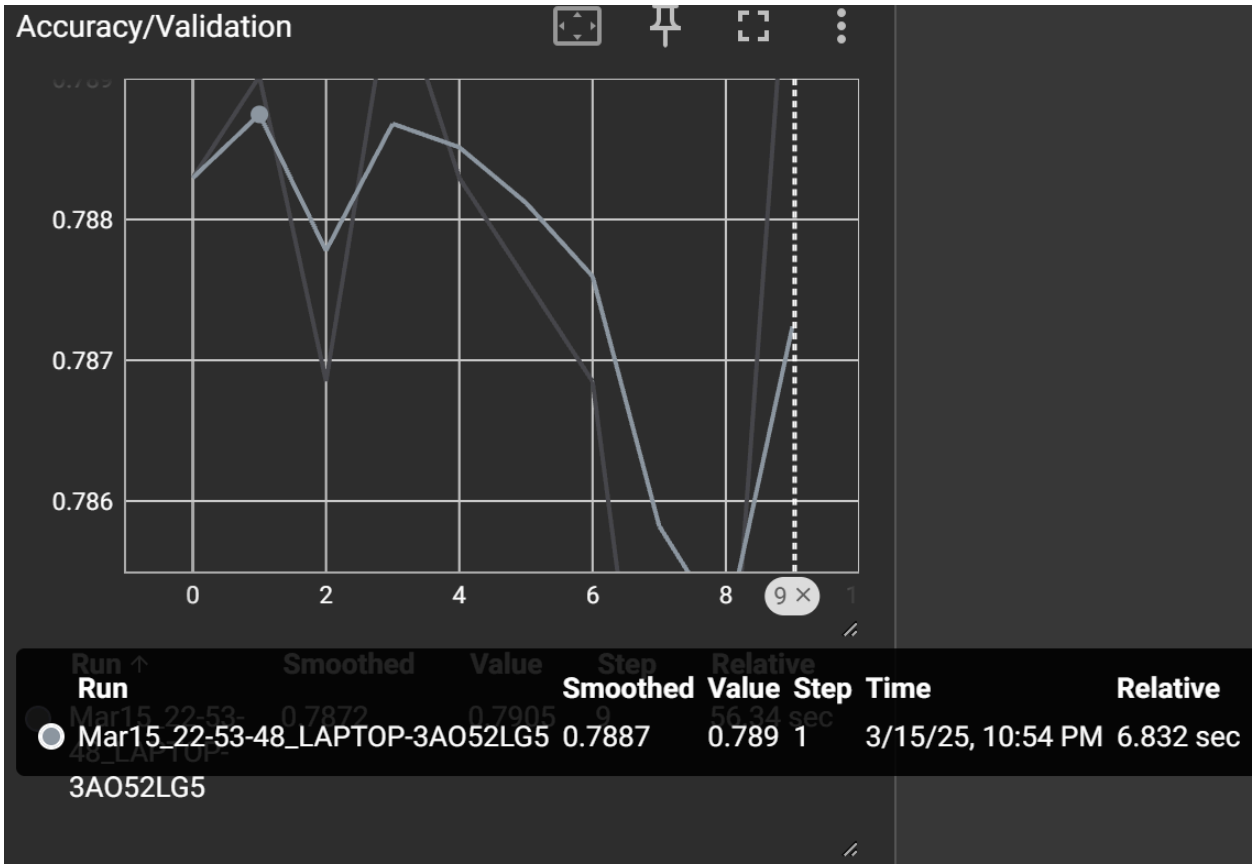


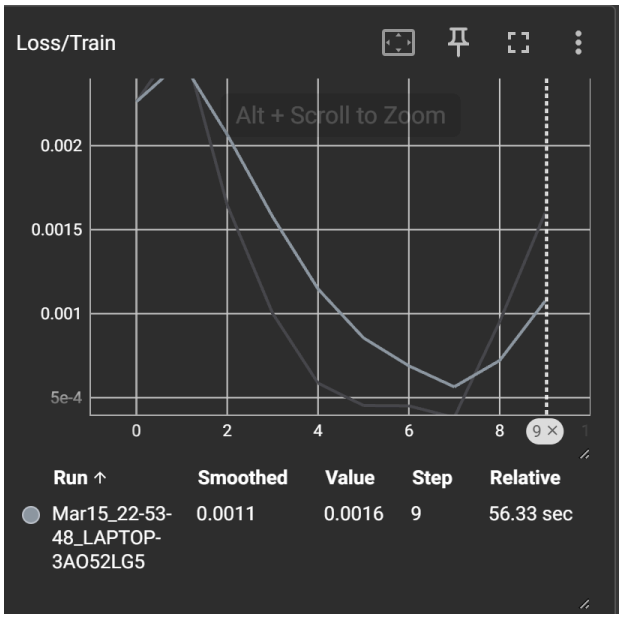


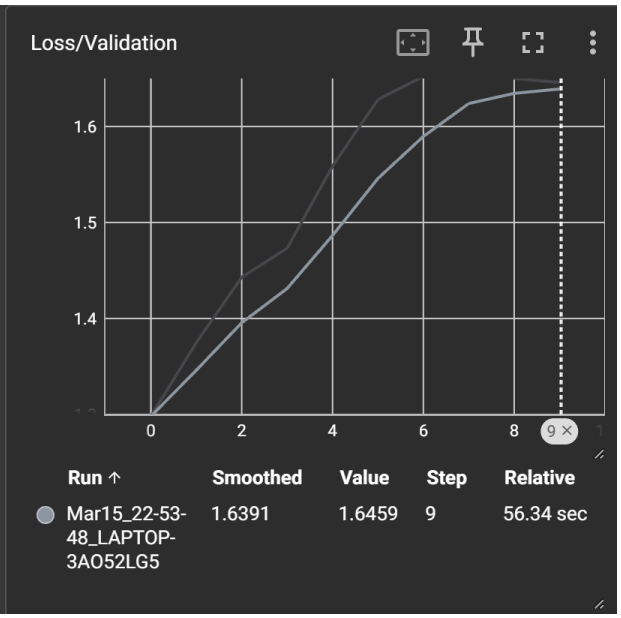


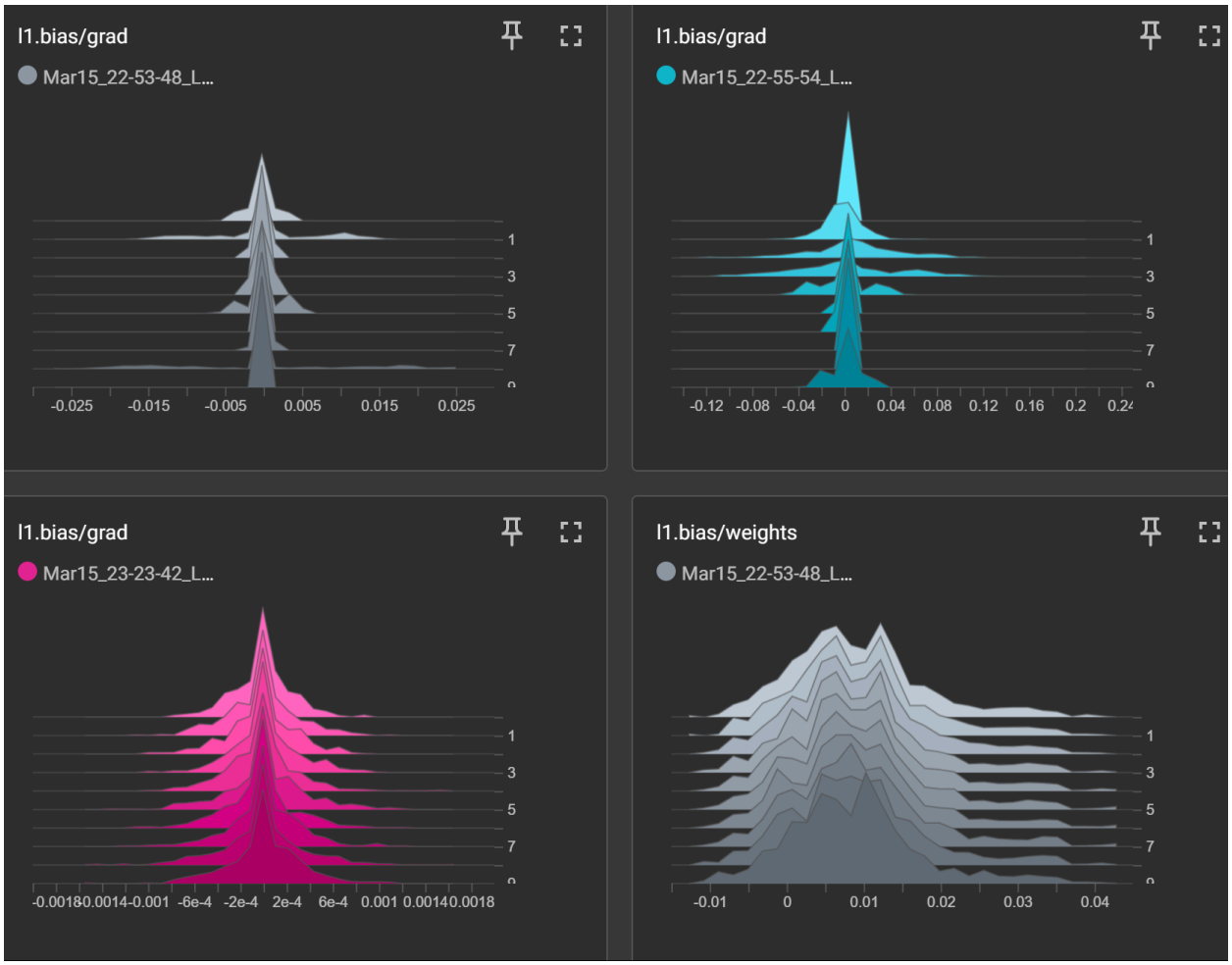

l1.bias/grad
Mar15_22-53-48_L...
1
3
5
7
-0.025
-0.015
-0.005
0.005
0.015
0.025
l1.bias/grad
Mar15_22-55-54_L...
1
3
5
7
-0.12
-0.08
-0.04
0
0.04
0.08
0.12
0.16
0.2
l1.bias/weights
Mar15_22-53-48_L...
1
3
5
7
-0.01
0
0.01
0.02
0.03
0.04
l1.bias/weights
Mar15_22-55-54_L...
1
3
5
7
-0.015
-0.005
0.005
0.015
0.025
0.035

Model 2

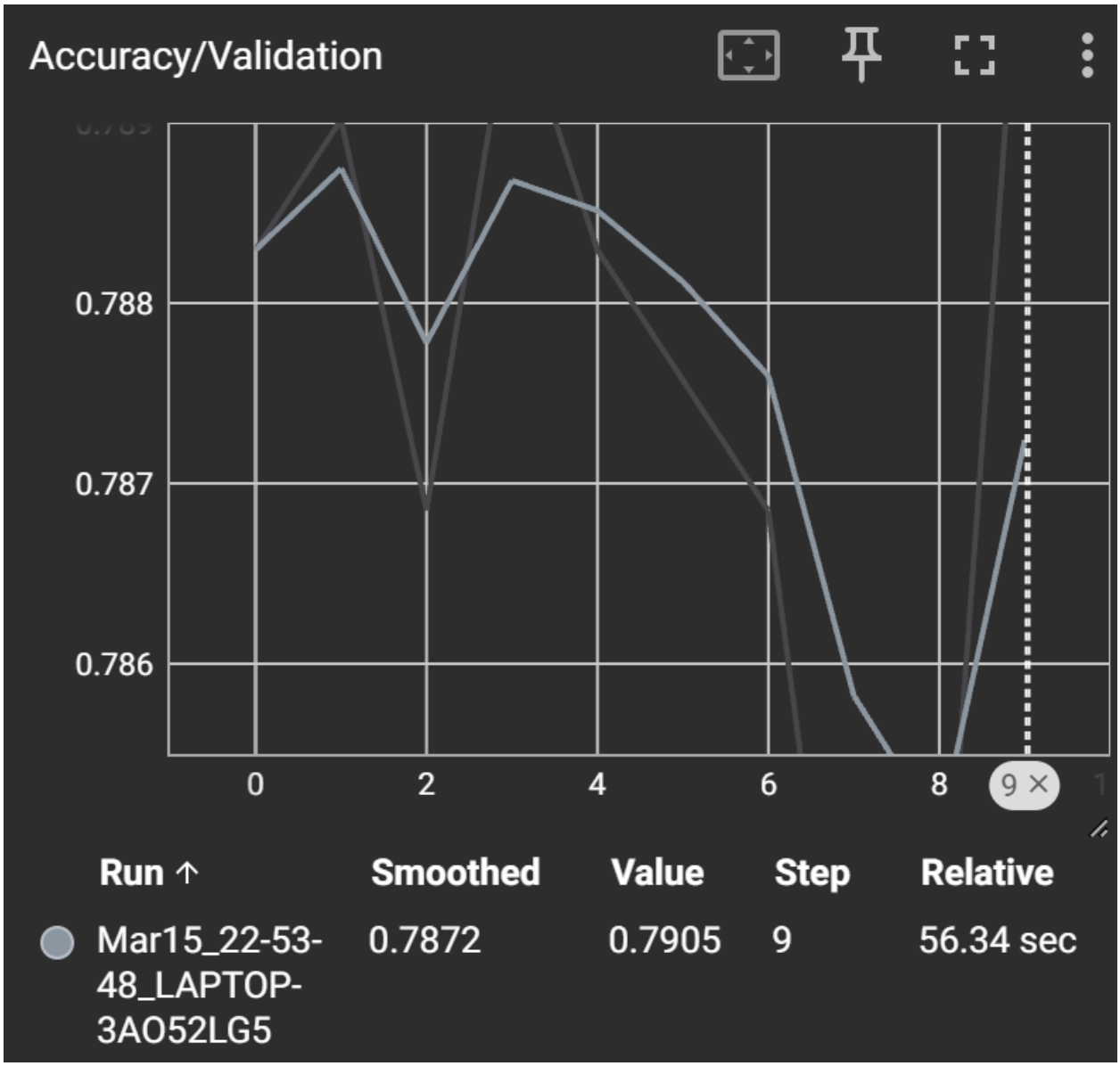

Accuracy/Validation
0.788
0.787
0.786
0
2
4
6
8
9
Run
Smoothed
Value
Step
Time
Relative
Mar15_22-53-48_LAPTOP-3AO52LG5
0.7887
0.789
1
3/15/25, 10:54 PM
6.832 sec

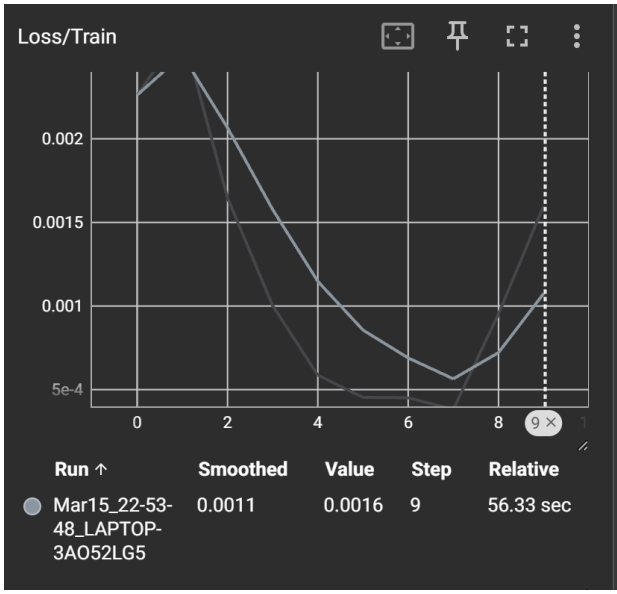

Loss/Train
Alt + Scroll to Zoom
0.002
0.0015
0.001
5e-4
0
2
4
6
8
9
Run
Smoothed
Value
Step
Relative
Mar15_22-53-48_LAPTOP-3AO52LG5
0.0011
0.0016
9
56.33 sec

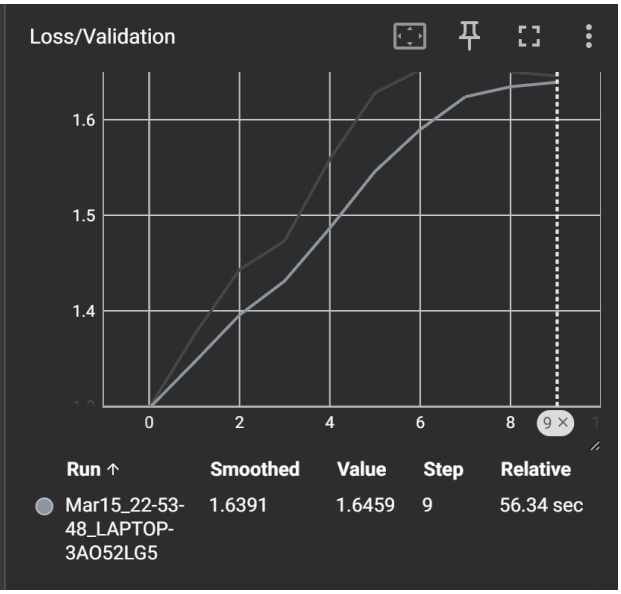

Loss/Validation
1.6
1.5
1.4
0
2
4
6
8
9
Run
Smoothed
Value
Step
Relative
Mar15_22-53-48_LAPTOP-3AO52LG5
1.6391
1.6459
9
56.34 sec

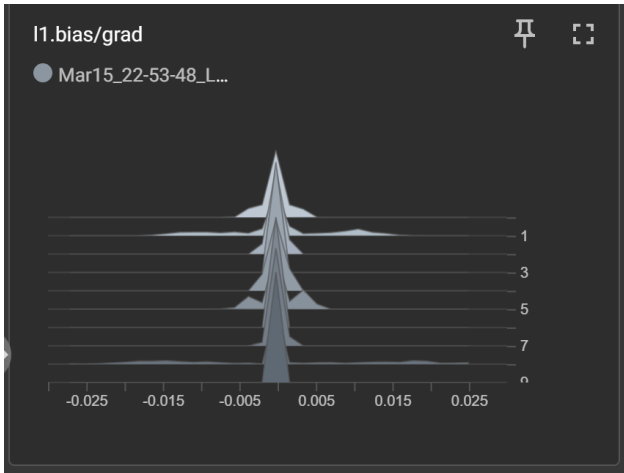

l1.bias/grad
Mar15_22-53-48_L...
1
3
5
7
-0.025
-0.015
-0.005
0.005
0.015
0.025
l1.bias/grad
Mar15_22-55-54_L...
1
3
5
7
-0.12
-0.08
-0.04
0
0.04
0.08
0.12
0.16
0.2
l1.bias/grad
Mar15_23-23-42_L...
1
3
5
7
-0.0018
-0.0014
-0.001
-6e-4
-2e-4
2e-4
6e-4
0.001
0.0014
0.0018
l1.bias/weights
Mar15_22-53-48_L...
1
3
5
7
-0.01
0
0.01
0.02
0.03
0.04

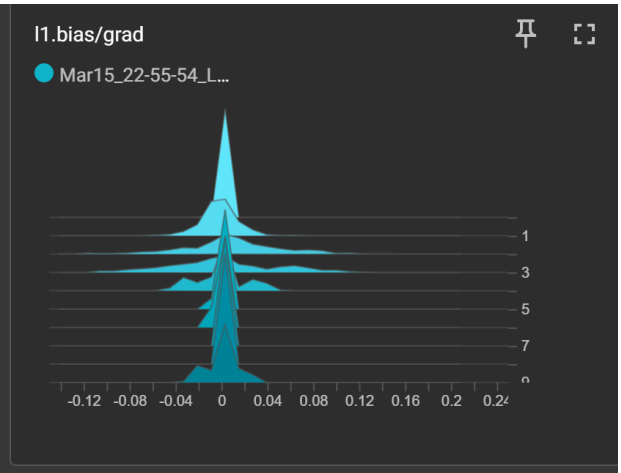
Model 1 IMDB:

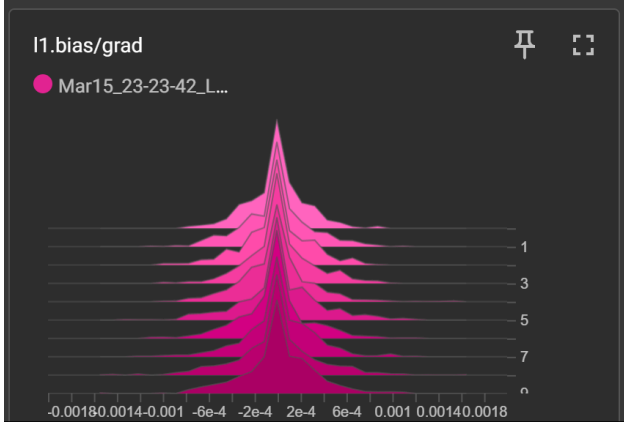

Accuracy/Validation
0.788
0.787
0.786
0
2
4
6
8
9
Run
Smoothed
Value
Step
Relative
Mar15_22-53-48_LAPTOP-3AO52LG5
0.7872
0.7905
9
56.34 sec

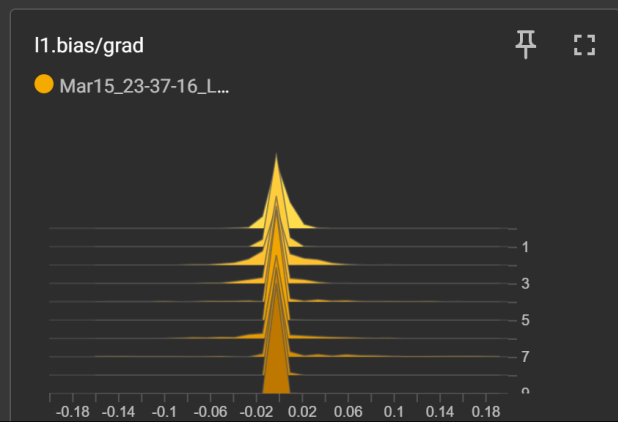

Loss/Train
0.002
0.0015
0.001
5e-4
0
2
4
6
8
9
Run ↑ Smoothed Value Step Relative
Mar15_22-53-48_LAPTOP-3AO52LG5 0.0011 0.0016 9 56.33 sec


Loss/Validation
1.6
1.5
1.4
0
2
4
6
8
9
Run ↑ Smoothed Value Step Relative
Mar15_22-53-48_LAPTOP-3AO52LG5 1.6391 1.6459 9 56.34 sec

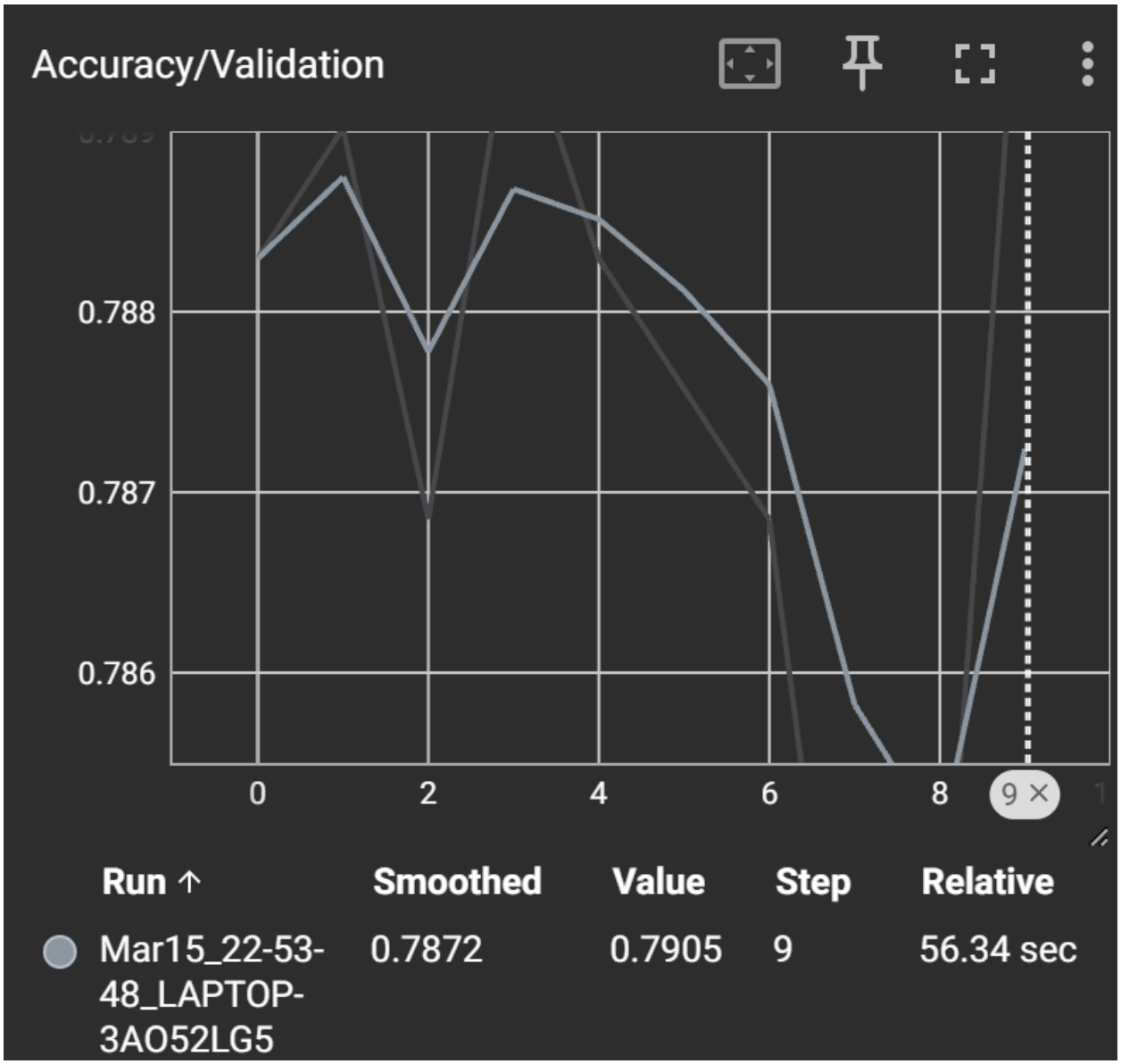

l1.bias/grad
Mar15_22-53-48_L...
1
3
5
7
-0.025
-0.015
-0.005
0.005
0.015
0.025

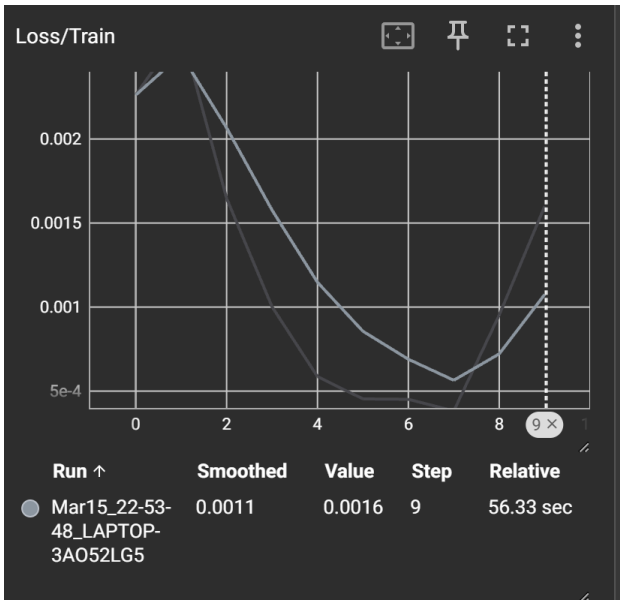

l1.bias/grad
Mar15_22-55-54_L...
1
3
5
7
-0.12
-0.08
-0.04
0
0.04
0.08
0.12
0.16
0.2

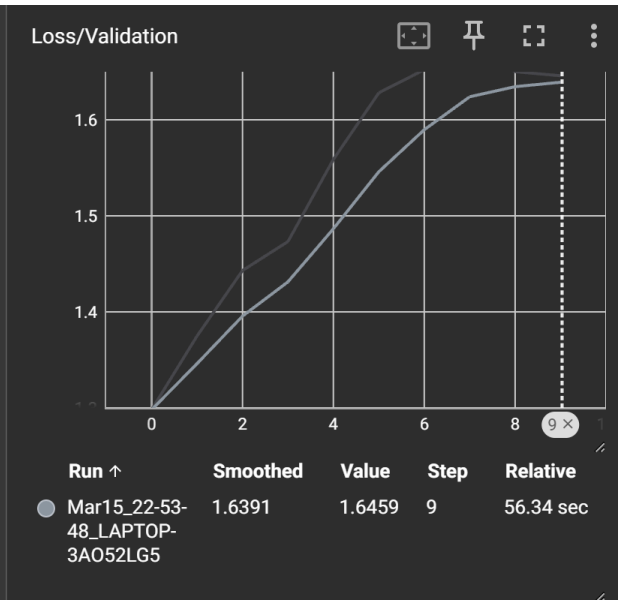

l1.bias/grad
Mar15_23-23-42_L...
1
3
5
7
-0.0018
0.0014
-0.001
-6e-4
-2e-4
2e-4
6e-4
0.001
0.0014
0.0018

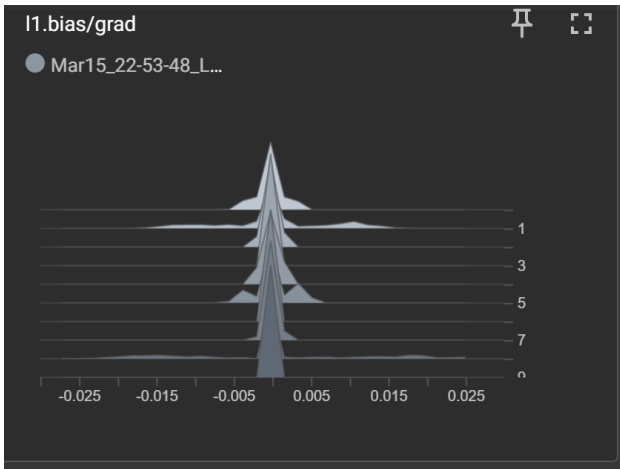

l1.bias/grad
Mar15_23-37-16_L...
1
3
5
7
-0.18
-0.14
-0.1
-0.06
-0.02
0.02
0.06
0.1
0.14
0.18

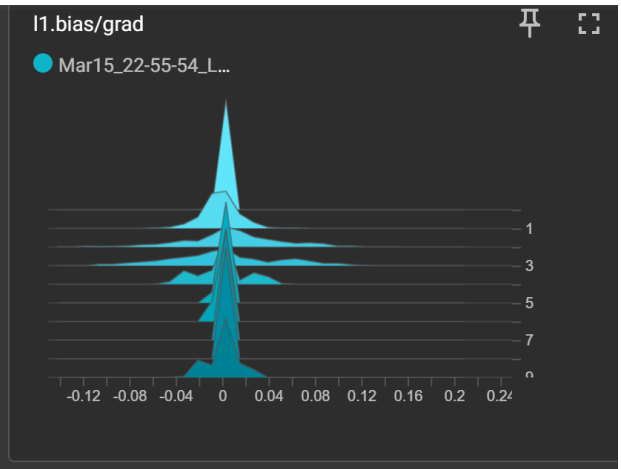
Model 2 IMDB

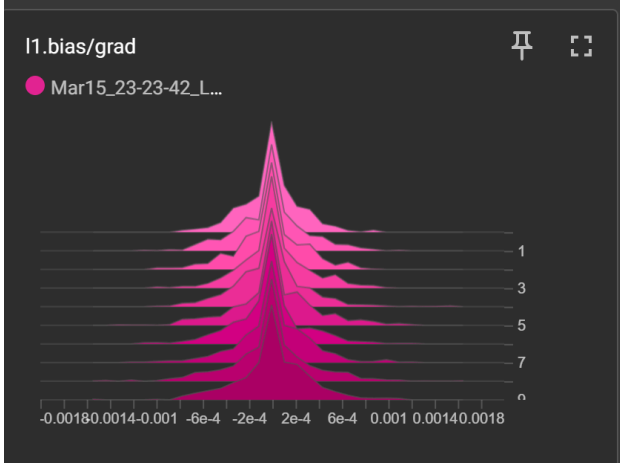

Accuracy/Validation
0.788
0.787
0.786
0
2
4
6
8
9
Run
Smoothed
Value
Step
Relative
Mar15_22-53-48_LAPTOP-3AO52LG5
0.7872
0.7905
9
56.34 sec

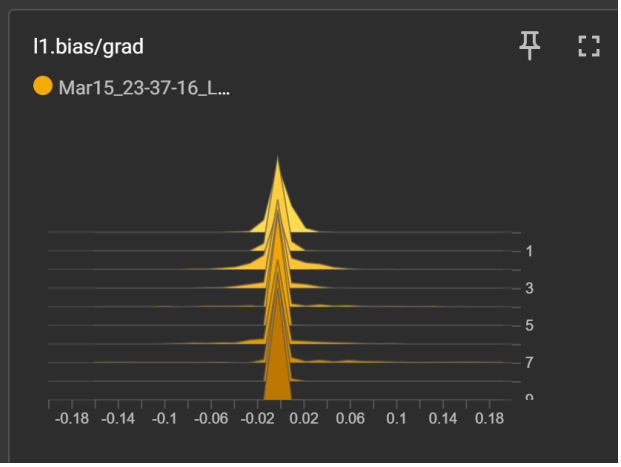

Loss/Train
0.002
0.0015
0.001
5e-4
0
2
4
6
8
9
Run
Smoothed
Value
Step
Relative
Mar15_22-53-48_LAPTOP-3AO52LG5
0.0011
0.0016
9
56.33 sec


Loss/Validation
1.6
1.5
1.4
0
2
4
6
8
9
Run
Smoothed
Value
Step
Relative
Mar15_22-53-48_LAPTOP-3AO52LG5
1.6391
1.6459
9
56.34 sec


l1.bias/grad
Mar15_22-53-48_L...
1
3
5
7
-0.025
-0.015
-0.005
0.005
0.015
0.025


l1.bias/grad
Mar15_22-55-54_L...
1
3
5
7
-0.12
-0.08
-0.04
0
0.04
0.08
0.12
0.16
0.2


l1.bias/grad
Mar15_23-23-42_L...
1
3
5
7
-0.0018
-0.0014
-0.001
-6e-4
-2e-4
2e-4
6e-4
0.001
0.0014
0.0018


l1.bias/grad
Mar15_23-37-16_L...
1
3
5
7
-0.18
-0.14
-0.1
-0.06
-0.02
0.02
0.06
0.1
0.14
0.18

Final Evaluation Results

Model 1

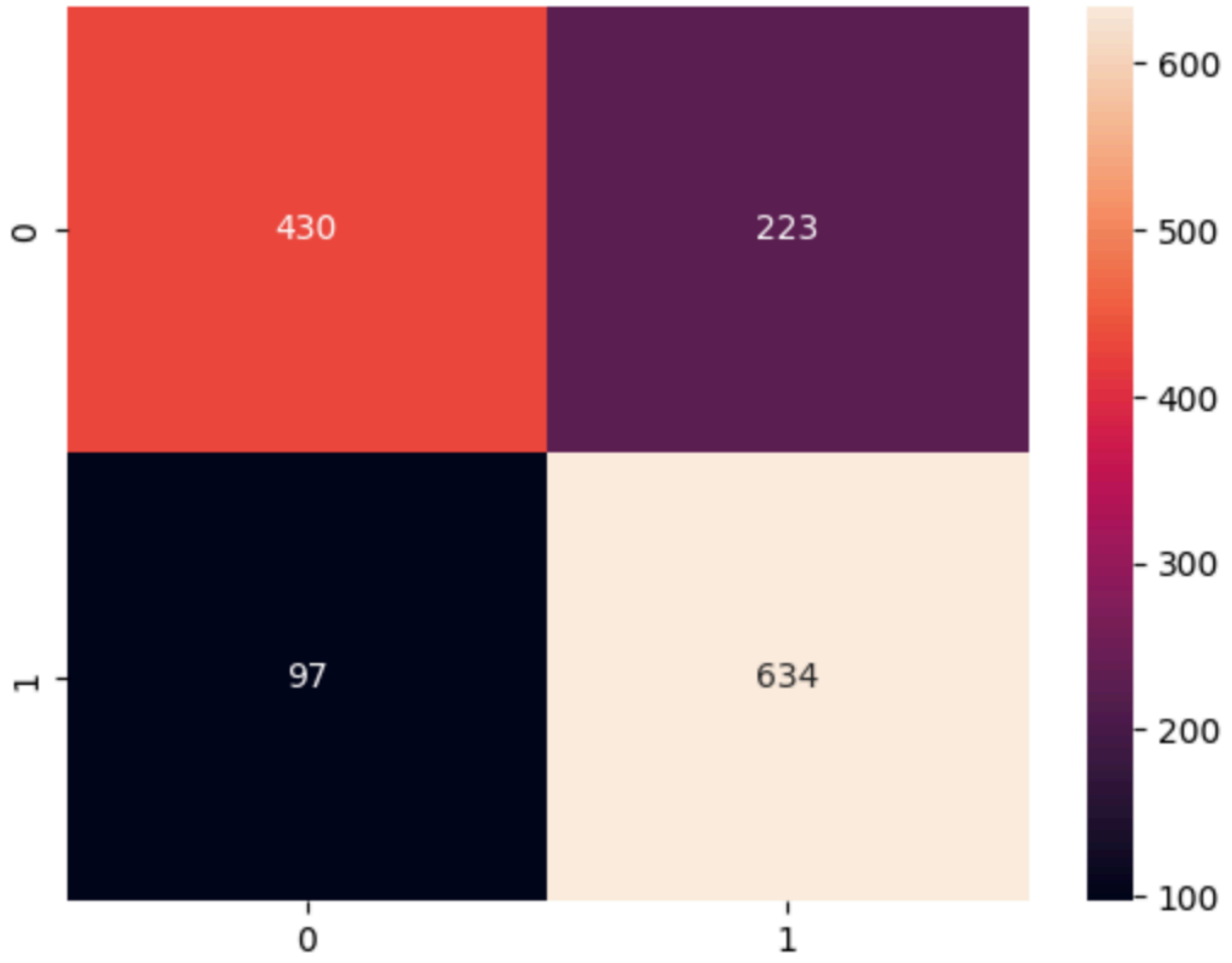
```
Accuracy Score: 0.7687861271676301
F1 Score: 0.7984886649874056
Precision Score: 0.7397899649941657
Recall Score: 0.8673050615595075
```

IMDB Model 1

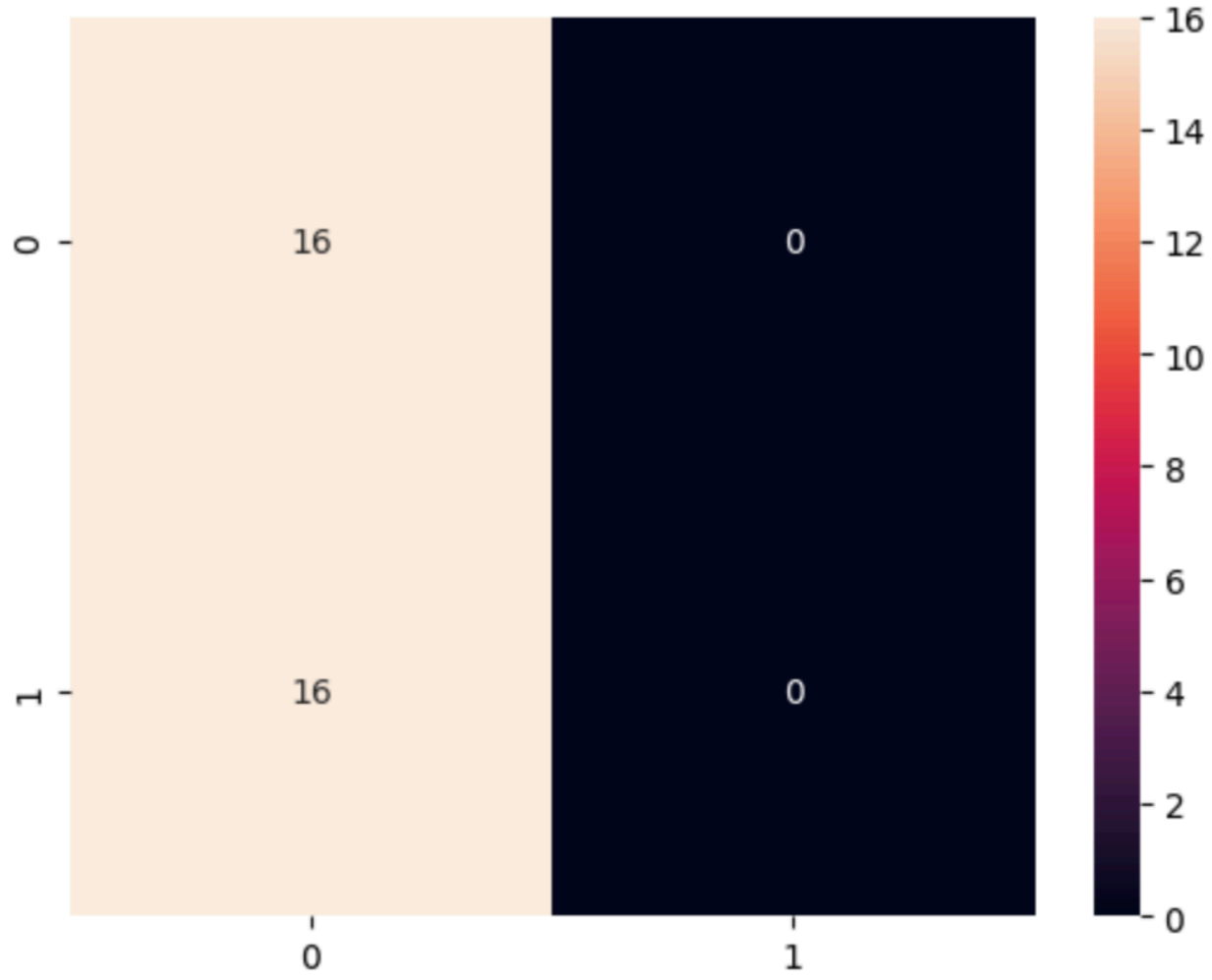
```
Accuracy Score: 0.8828
F1 Score: 0.8804081632653061
Precision Score: 0.8991246352646937
Recall Score: 0.8624550179928029
```

Confusion Matrix Visualization

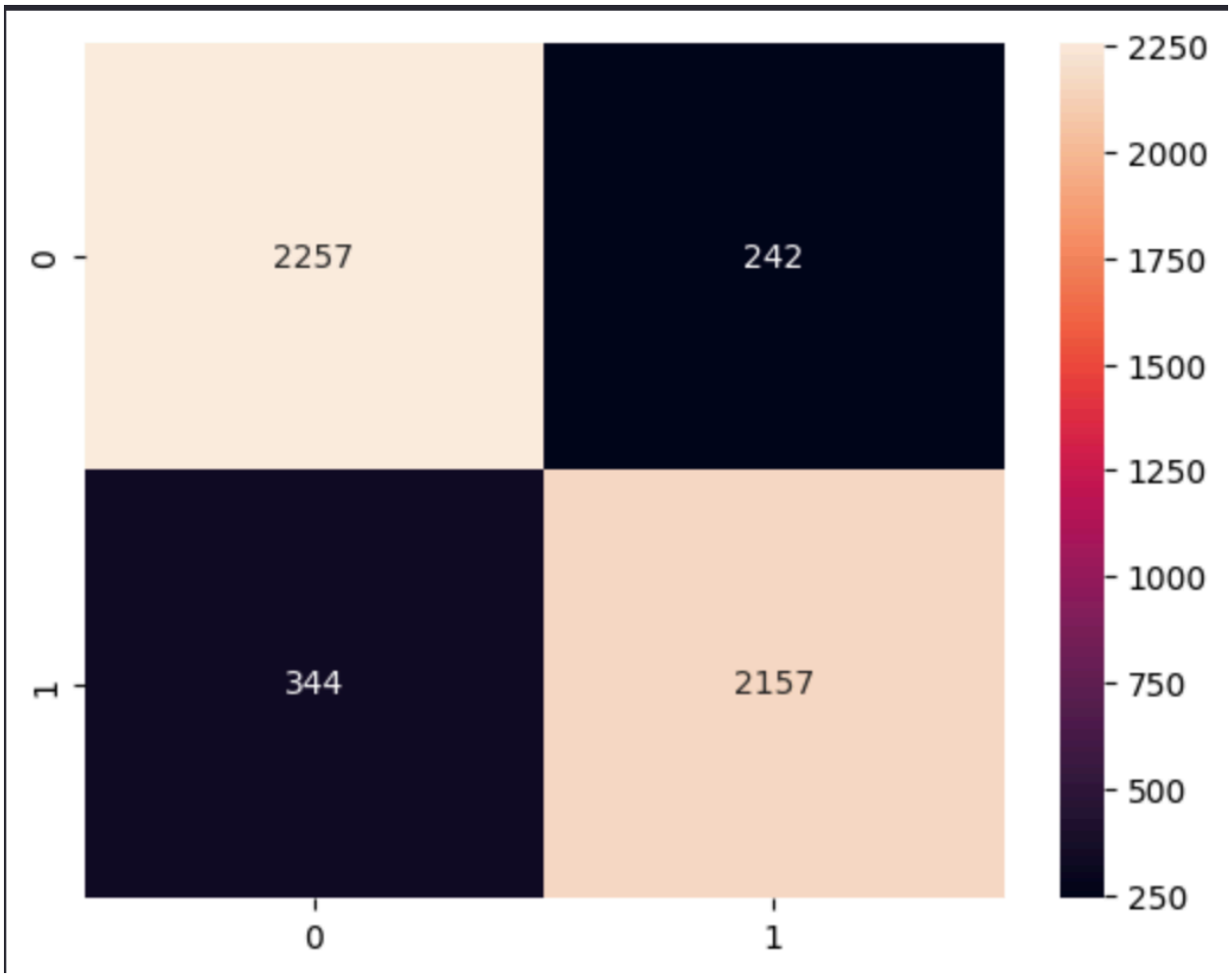
Model 1



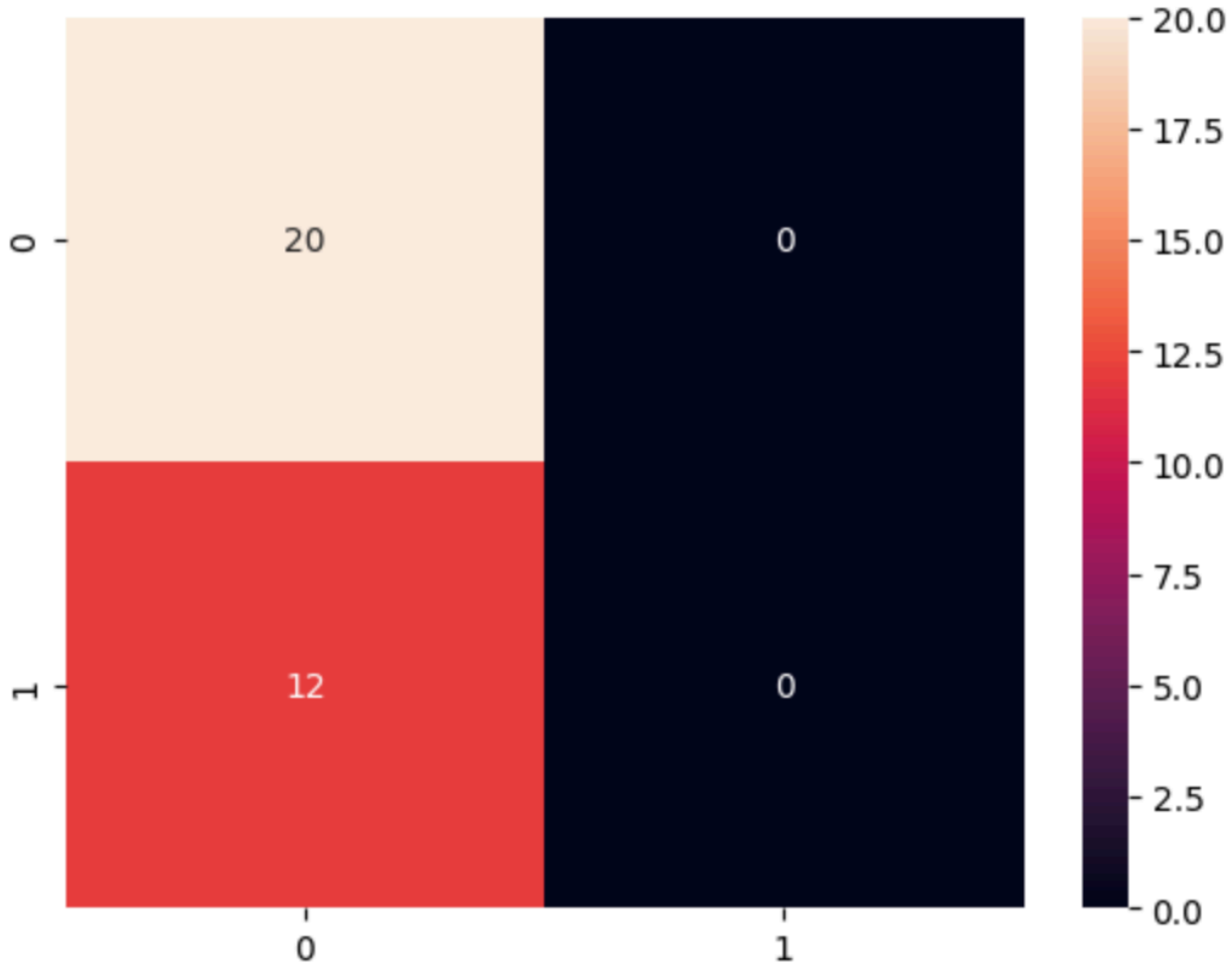
Model 2:



IMDB Model 1:

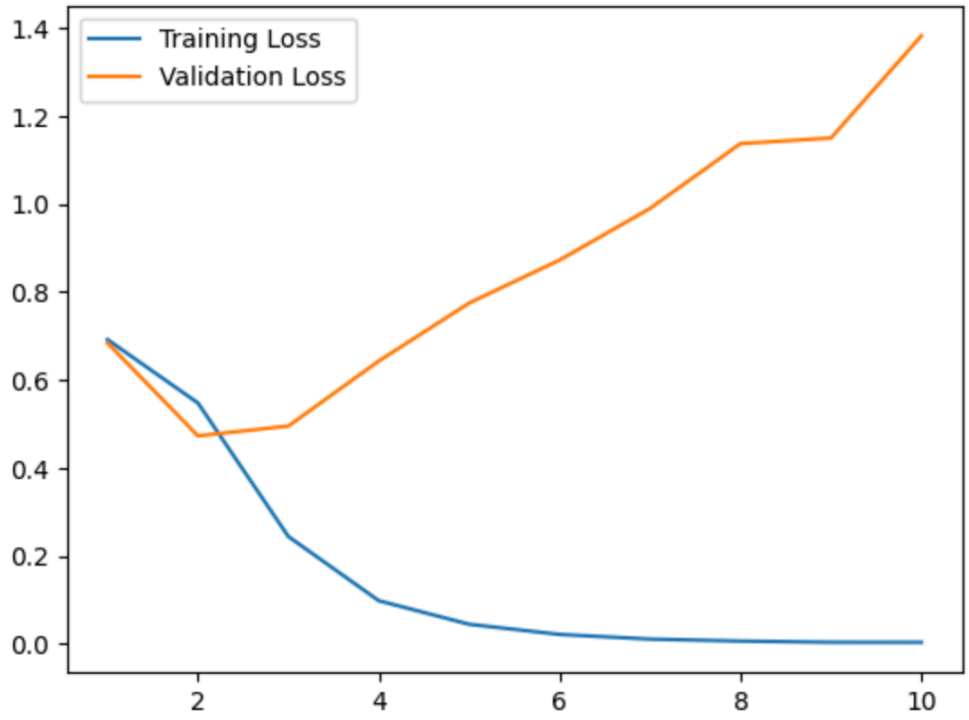

2257
242
344
2157
0
1
0
1
2250
2000
1750
1500
1250
1000
750
500
250

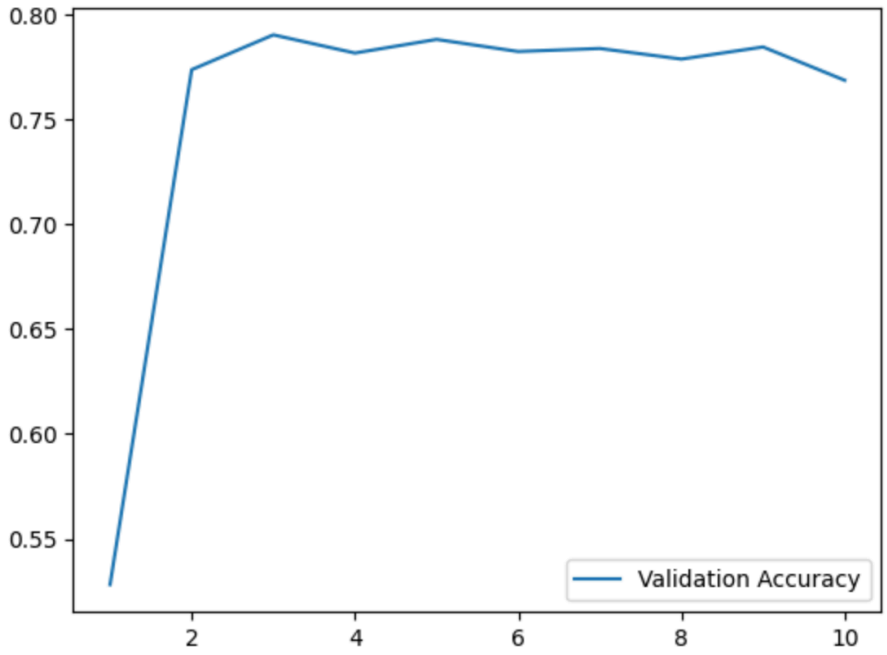
IMDB Model 2:



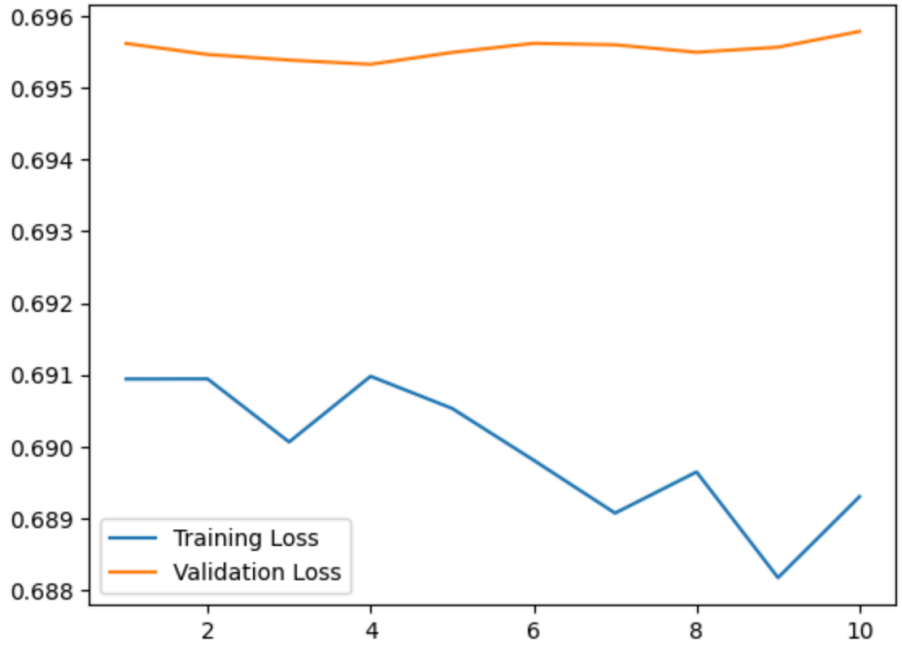
Training and Validation Loss Curves:

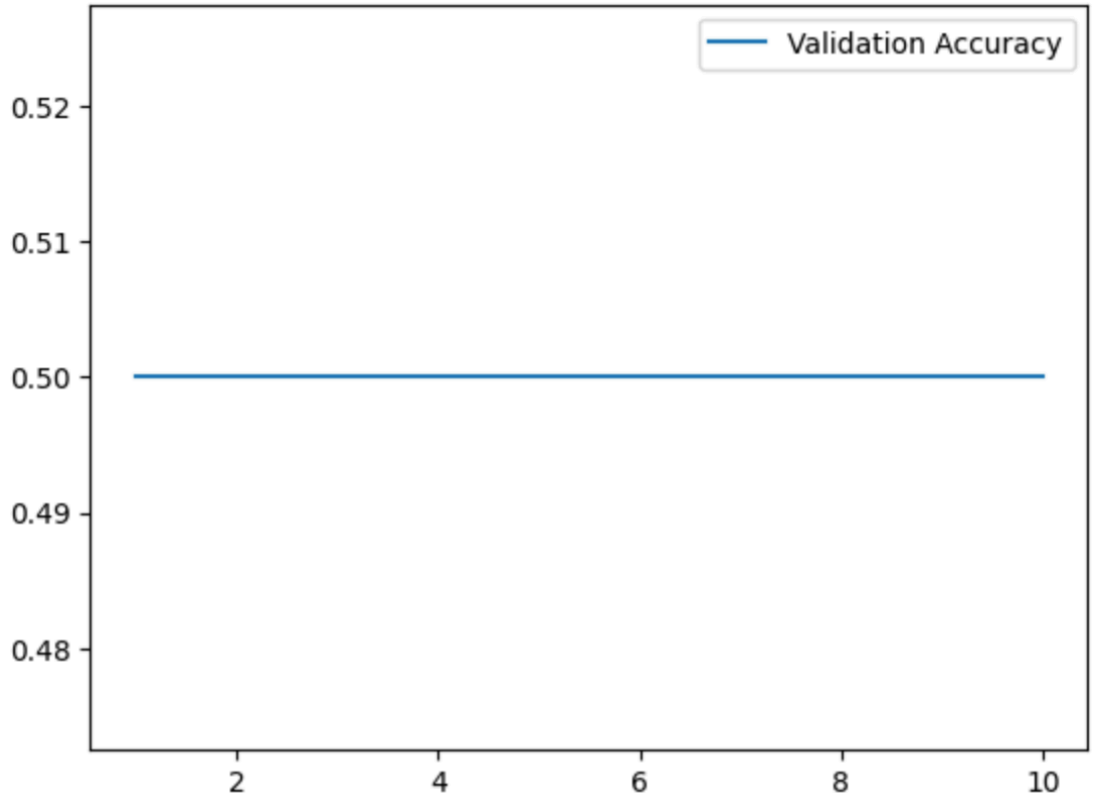
Model 1



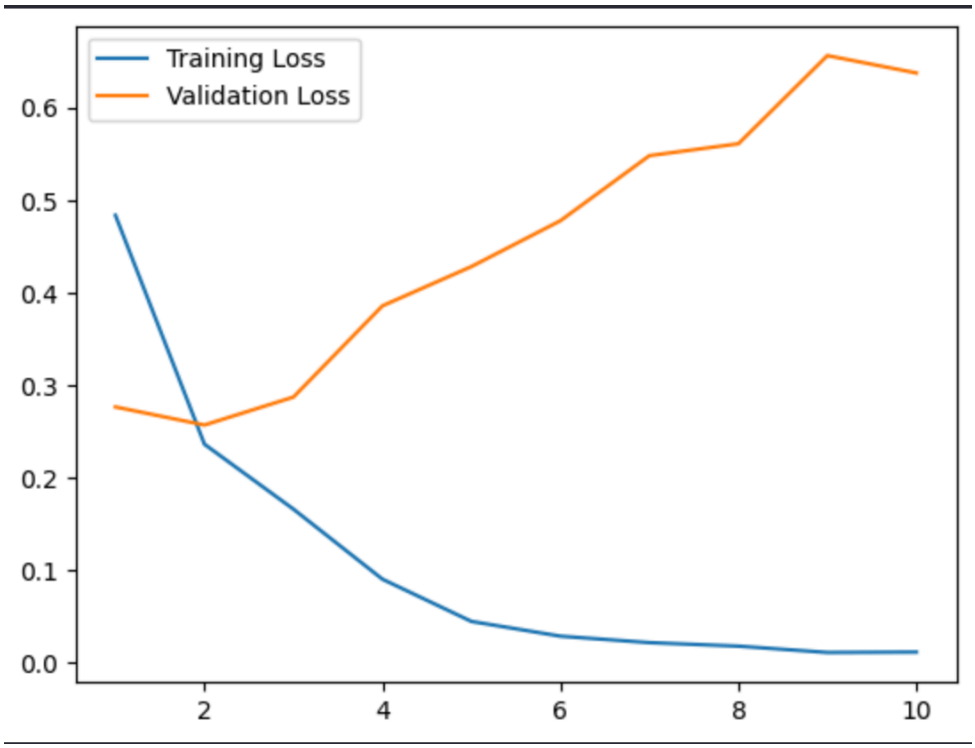


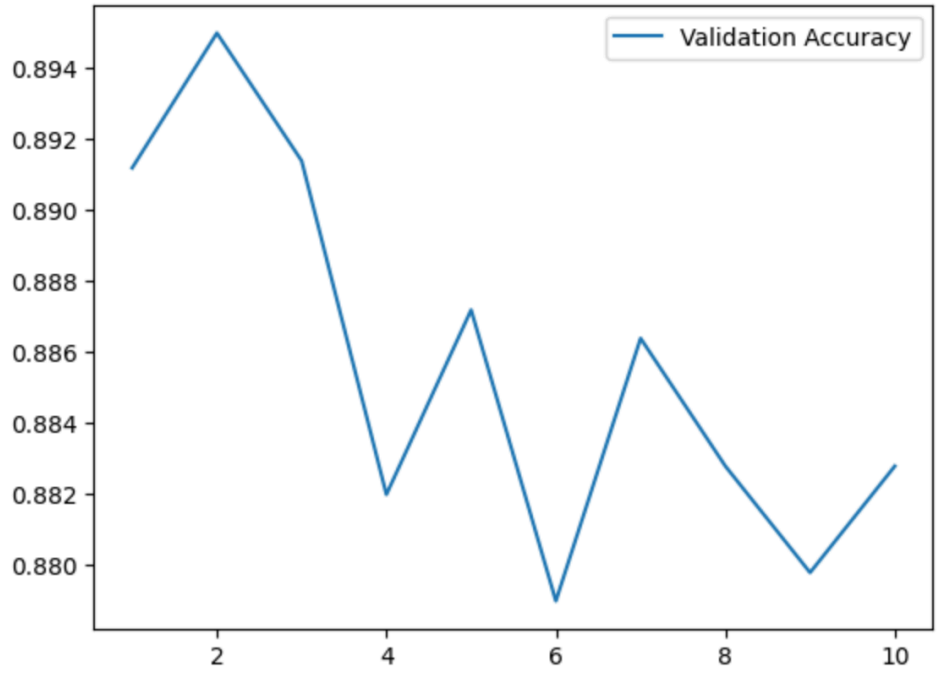
Model 2


0.696
0.695
0.694
0.693
0.692
0.691
0.690
0.689
0.688
2
4
6
8
10
Training Loss
Validation Loss

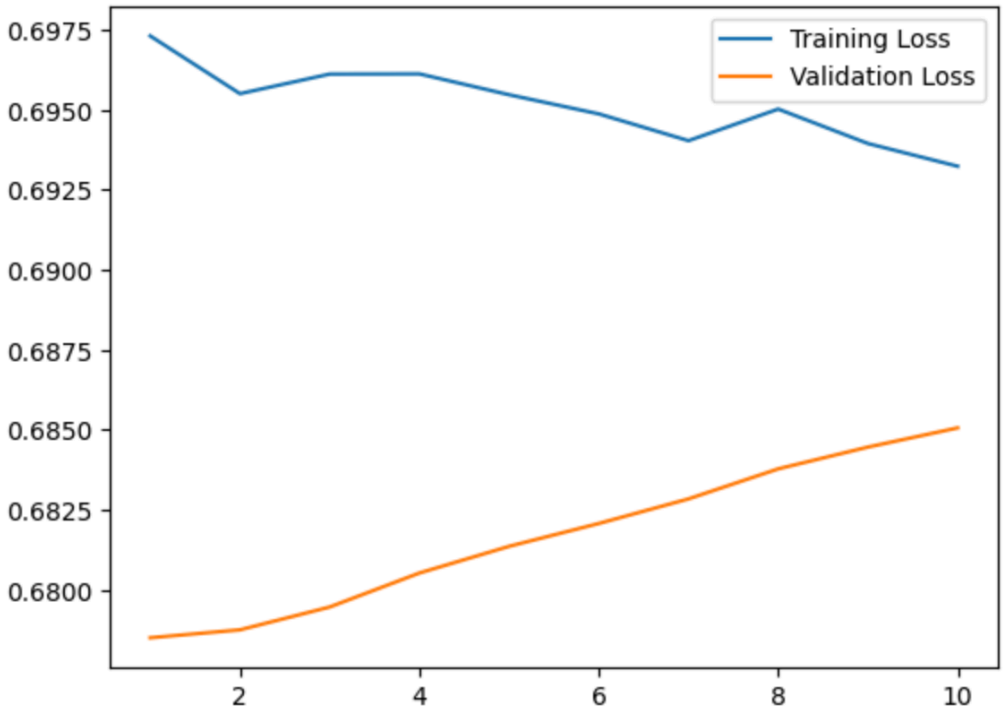

Validation Accuracy
0.52
0.51
0.50
0.49
0.48
2
4
6
8
10

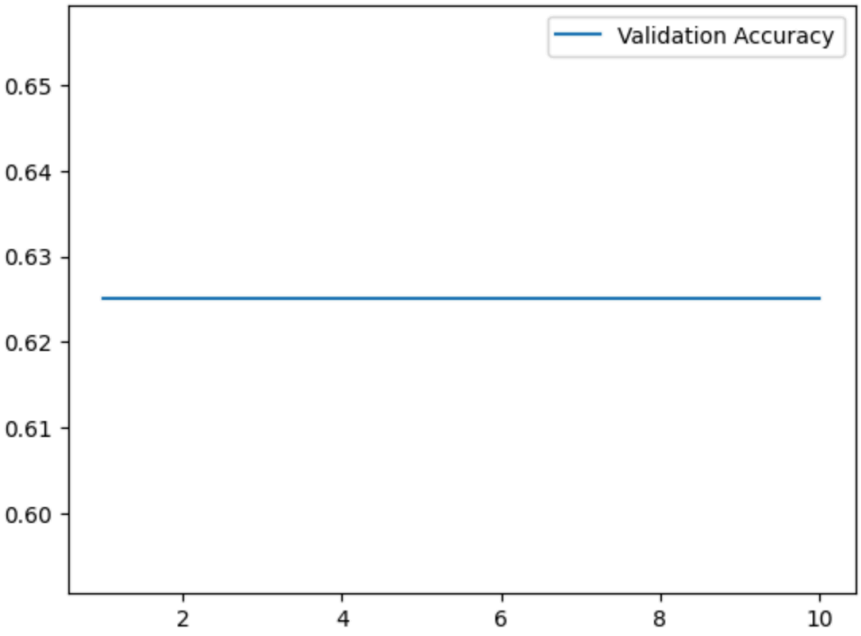
IMDB Model 1


Training Loss
Validation Loss
0.6
0.5
0.4
0.3
0.2
0.1
0.0
2
4
6
8
10


Validation Accuracy
0.894
0.892
0.890
0.888
0.886
0.884
0.882
0.880
2
4
6
8
10

IMDB Model 2:


Training Loss
Validation Loss
0.6975
0.6950
0.6925
0.6900
0.6875
0.6850
0.6825
0.6800
2
4
6
8
10


Validation Accuracy
0.65
0.64
0.63
0.62
0.61
0.60
2
4
6
8
10