BSCS17001

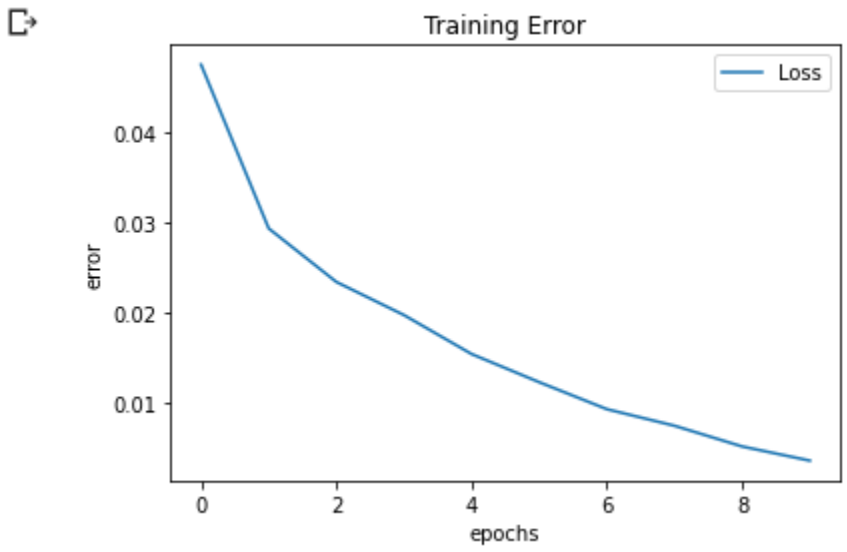
Assignment 5

Task2

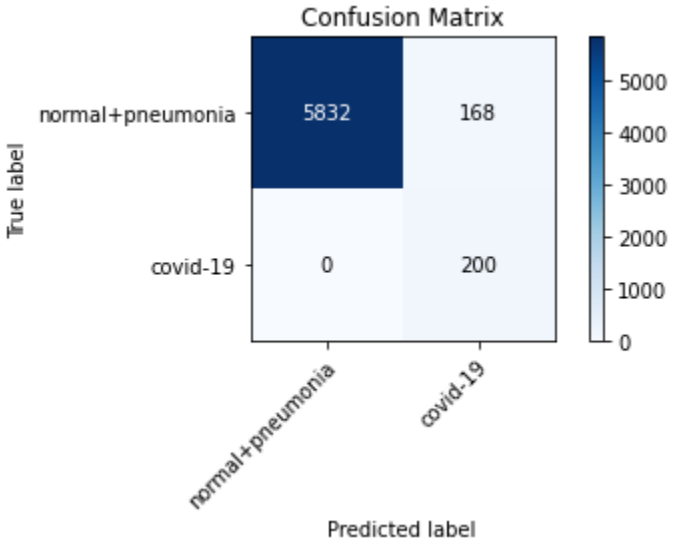
Task1

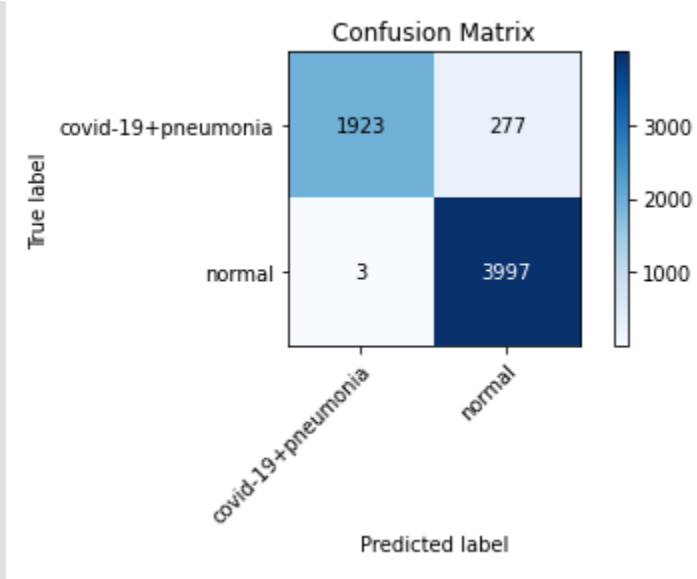
Without focal loss

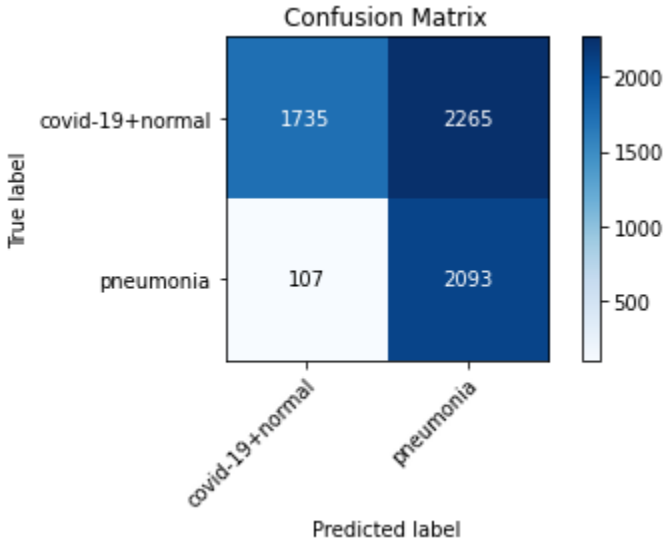
Vgg16



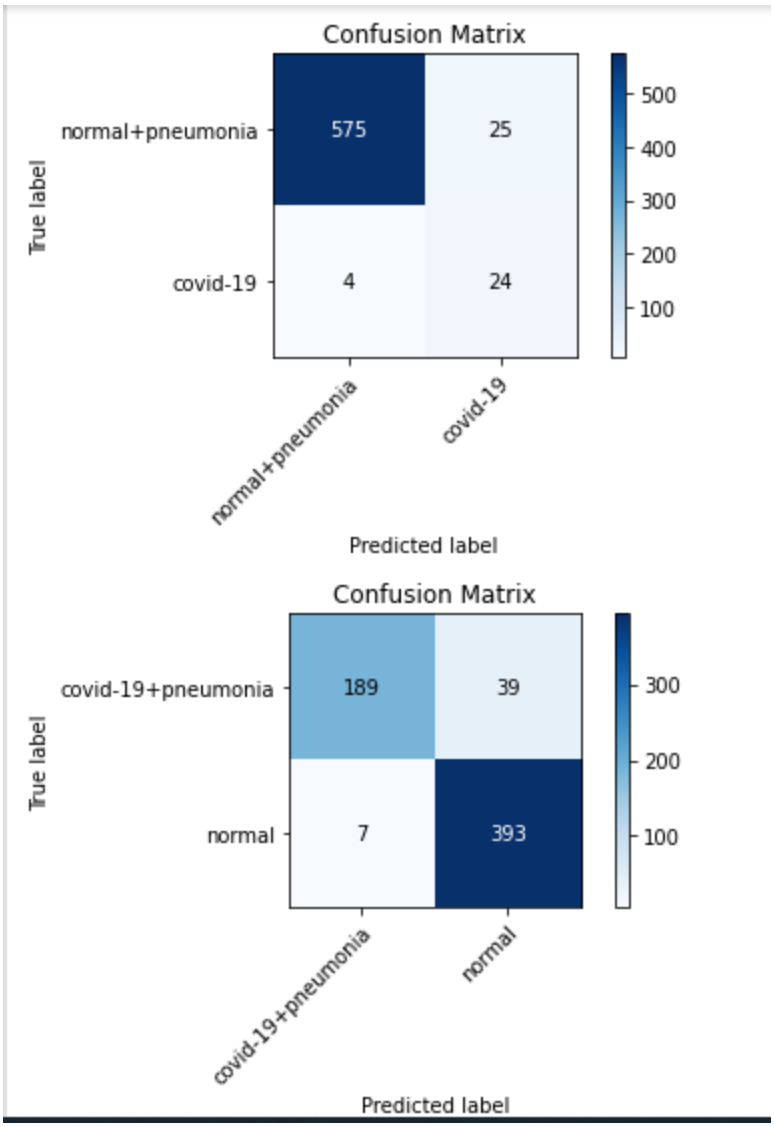

```
Accuracy of Training data after fine tuning of FC layers: 54%
Confusion Matrix
```

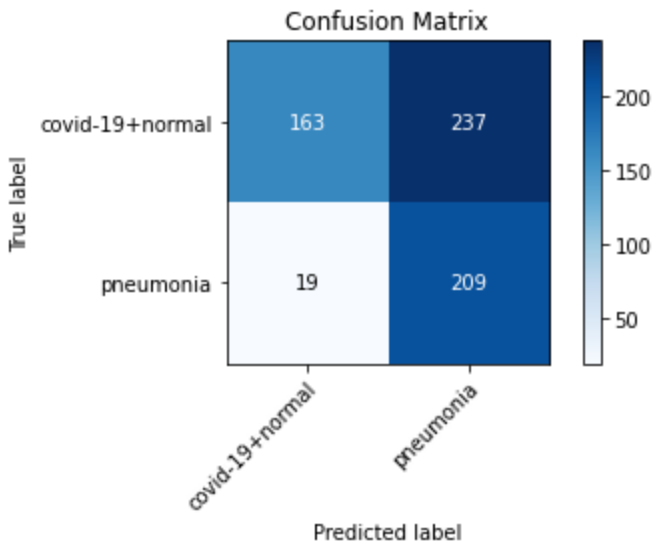




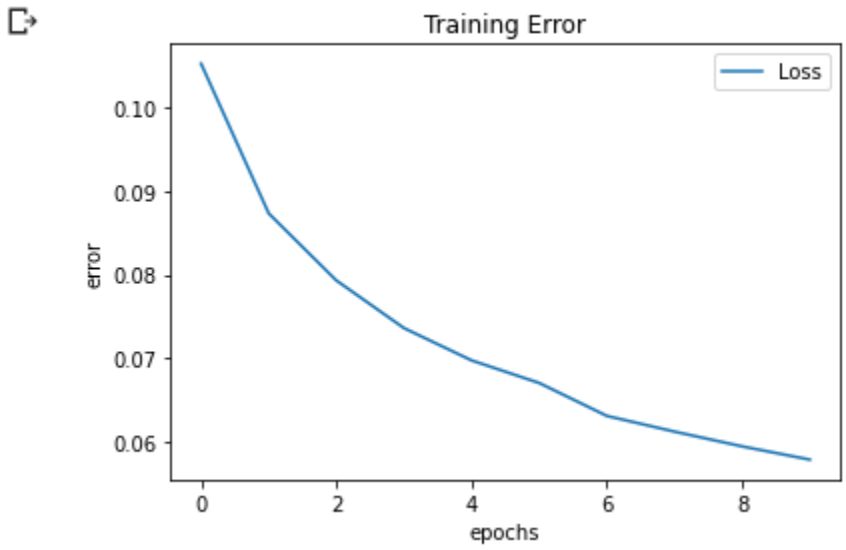


Accuracy of validation data after fine tuning of FC layers: 50%
Confusion Matrix


Confusion Matrix
normal+pneumonia
covid-19
True label
575
25
4
24
500
400
300
200
100
normal+pneumonia
covid-19
Predicted label
Confusion Matrix
covid-19+pneumonia
normal
True label
189
39
7
393
300
200
100
covid-19+pneumonia
normal
Predicted label



Resnet18

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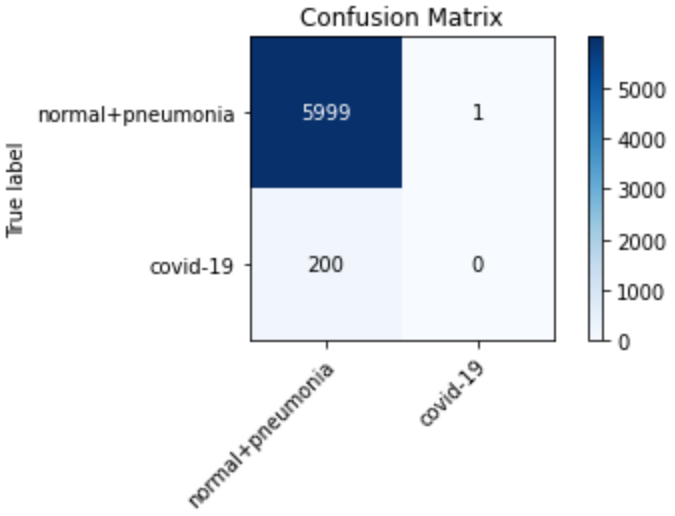
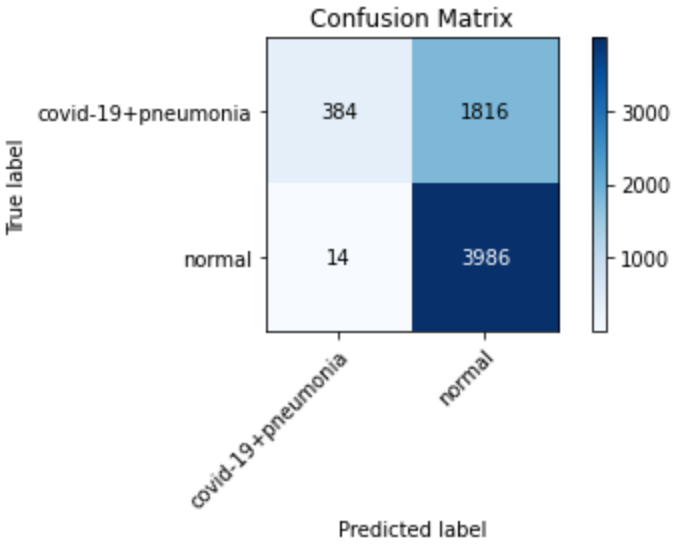
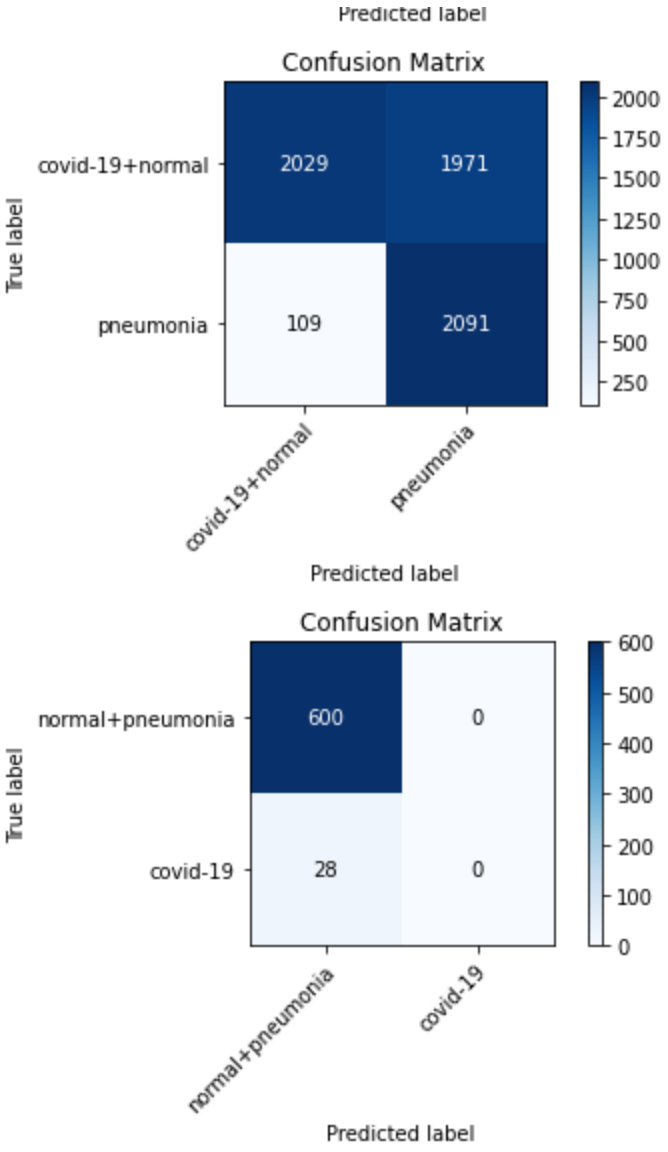
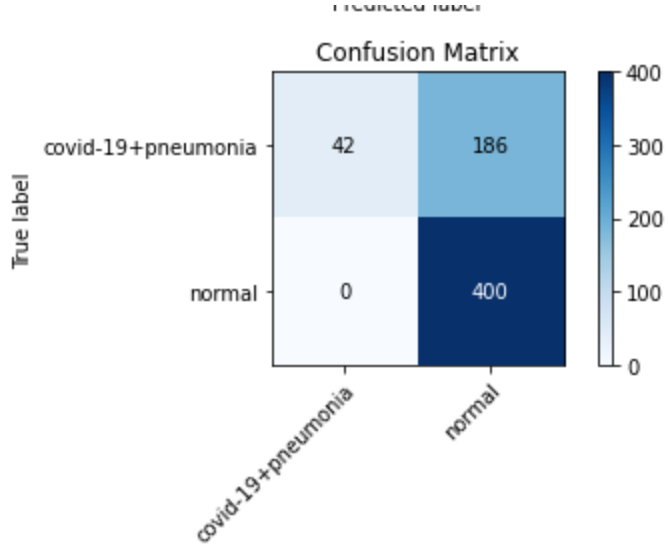
Accuracy of Training data after fine tuning of FC layers: 38%
Confusion Matrix
```


Confusion Matrix
normal+pneumonia
covid-19
5999
1
200
0
True label
5000
4000
3000
2000
1000
0
normal+pneumonia
covid-19
Predicted label

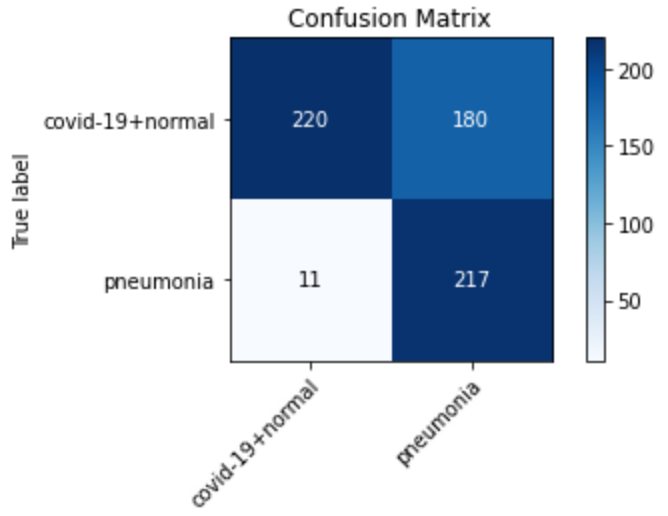

Confusion Matrix
covid-19+pneumonia
normal
384
1816
14
3986
True label
3000
2000
1000
covid-19+pneumonia
normal
Predicted label



Accuracy of validation data after fine tuning of FC layers: 41%
Confusion Matrix



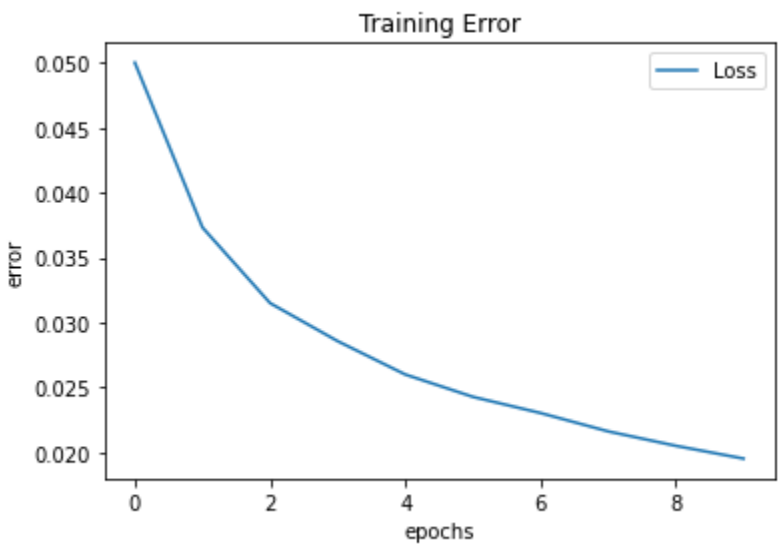
Predicted label



Task 2

With focal loss

Vgg16

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Accuracy of training data after fine tuning of FC layers: 91%
Confusion Matrix
```
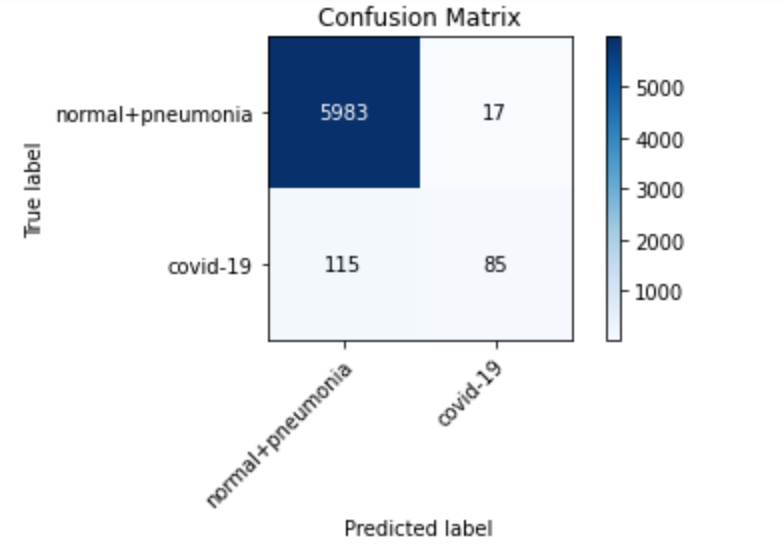
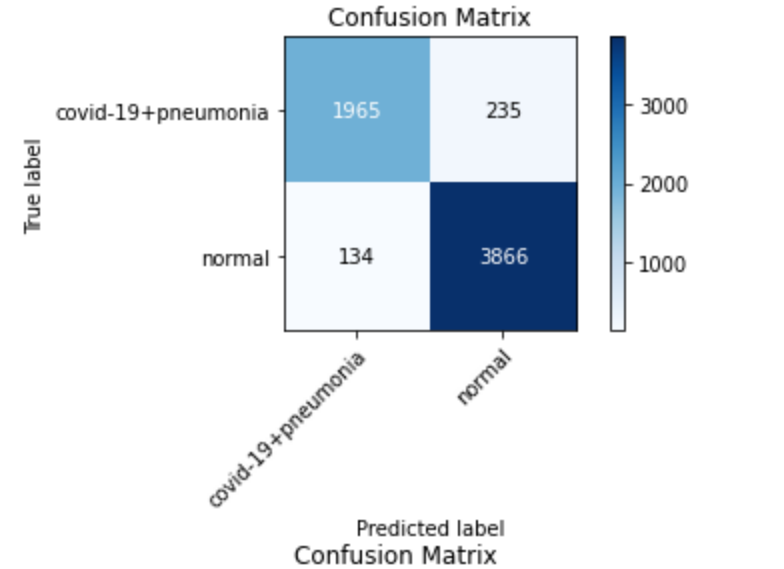
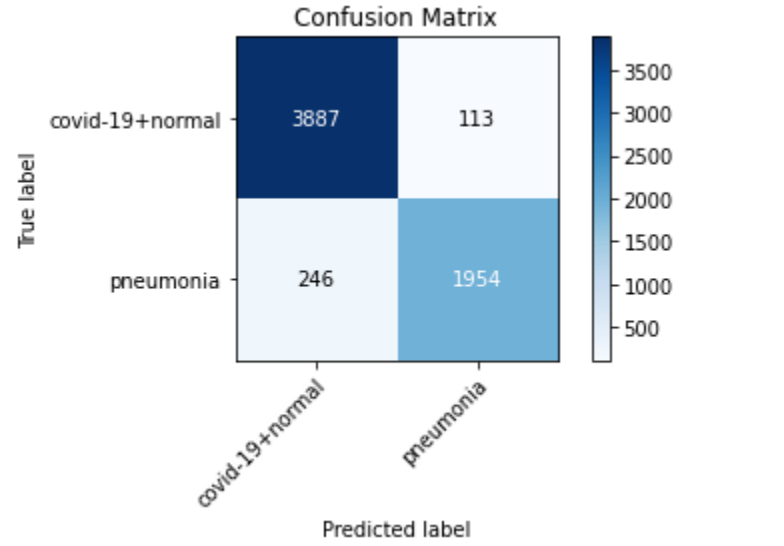
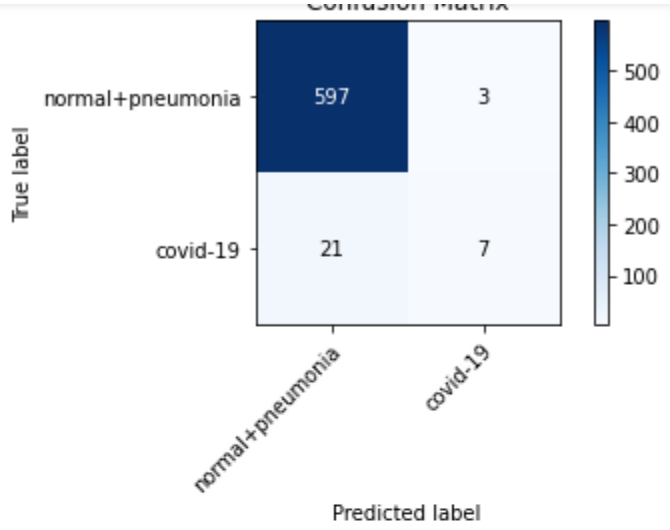



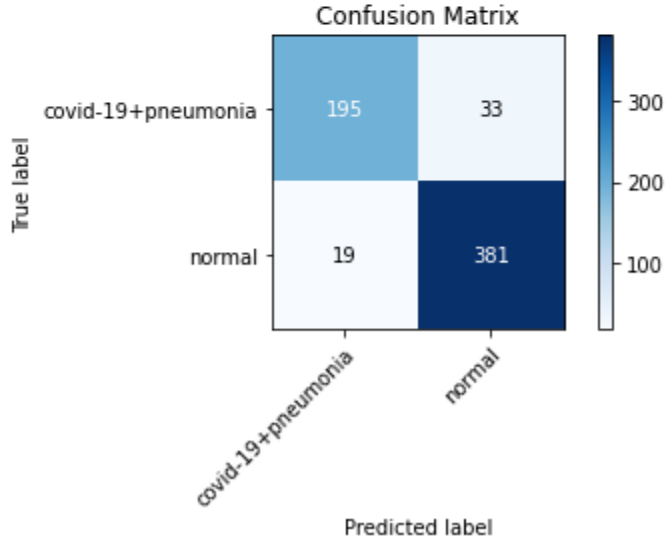


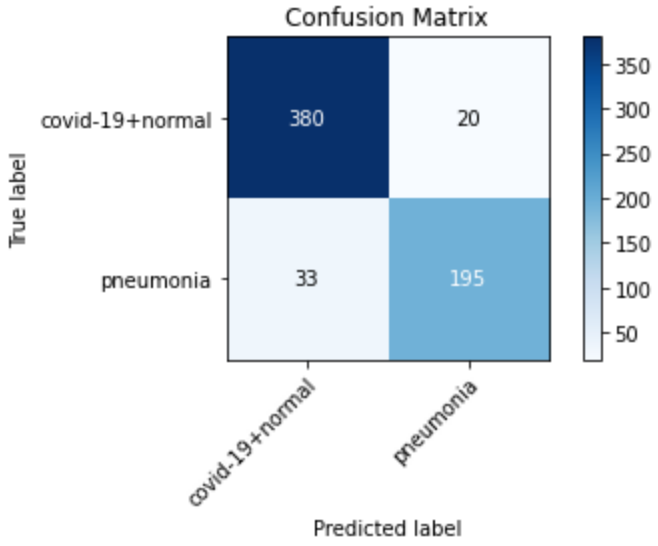


Accuracy of validation data after fine tuning of FC layers: 88%

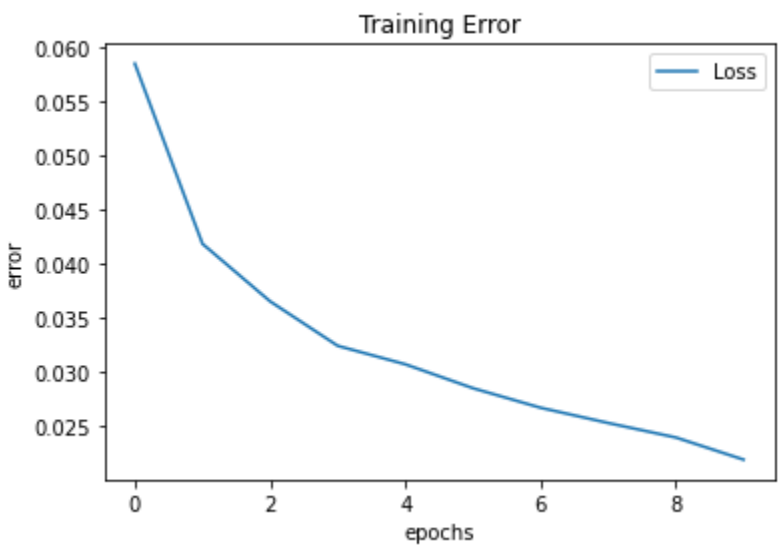
Confusion Matrix



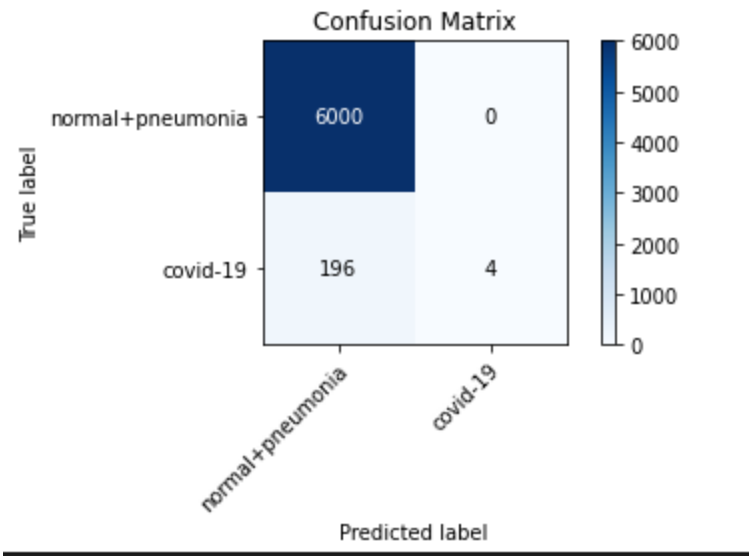


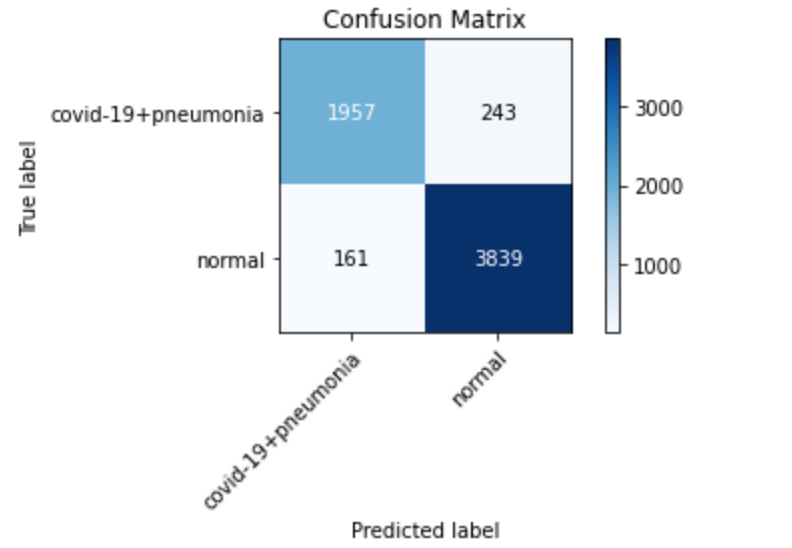


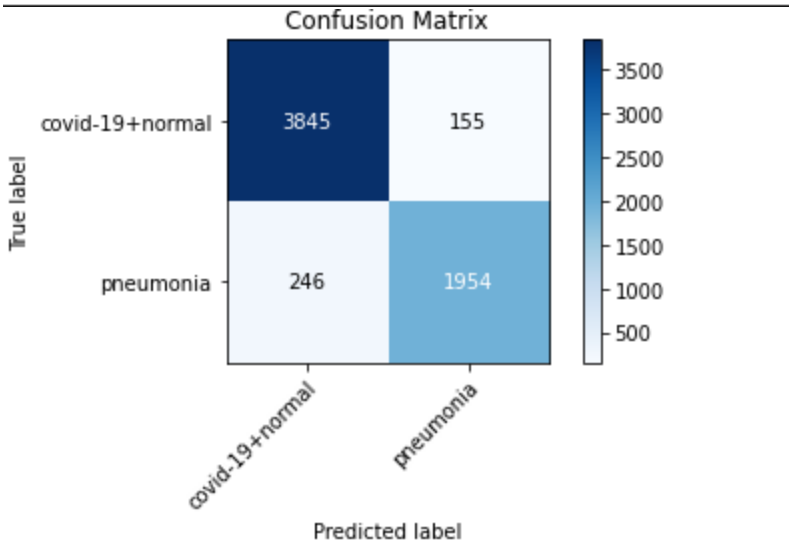
Resnet-18



Accuracy of Training data after fine tuning of FC layers: 89%
Confusion Matrix

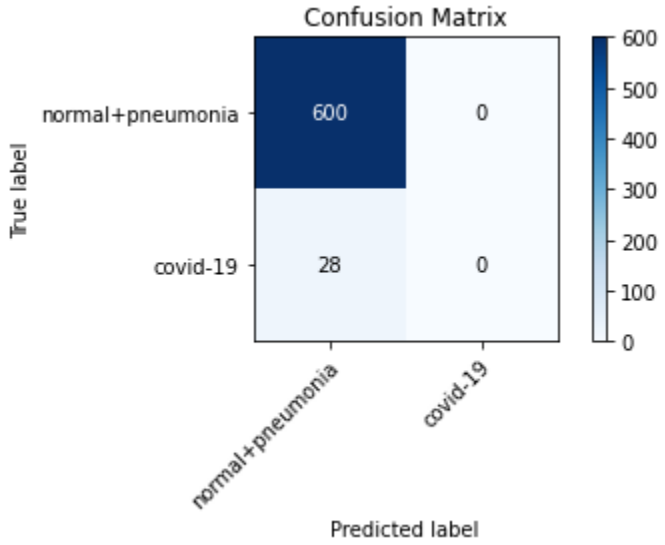


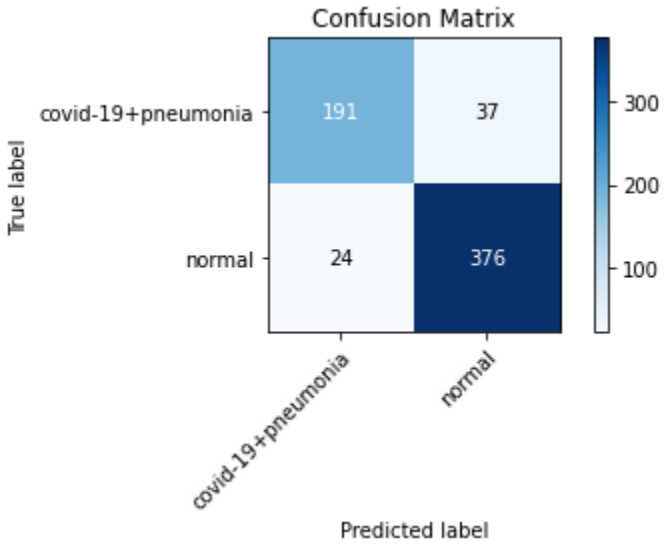


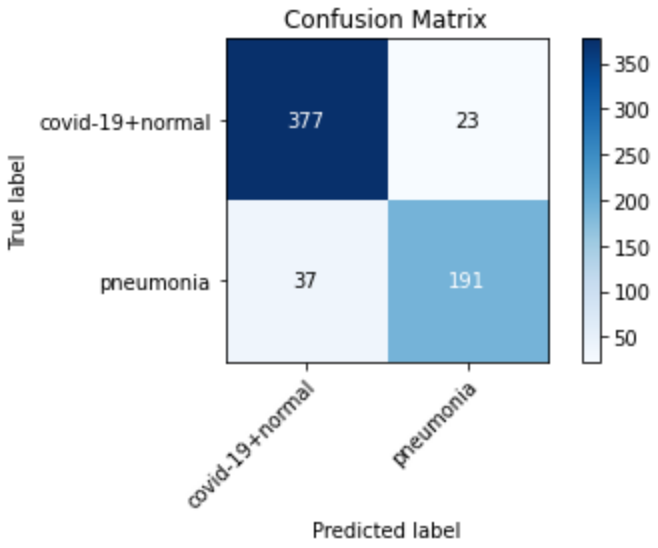


Accuracy of Validation data after fine tuning of FC layers: 86%

Confusion Matrix







Final Comments:

The models in general works many times better with focal loss. However vgg16 outperformed the renet18 model. The learning rate for the vgg16 best model was 0.0001 while the momentum was 0.9.

For best model of resnet18, the learning rate was 0.0007 and momentum was 0.9.

The gamma for the focal loss was kept 1.5.