VGG 16

		5 Epochs	10 Epochs	15 Epochs
Training Accuracy		96.78%	95.25%	99.63%
Testing Accuracy		93.55%	92.06%	99.50%
Macro Avg.	**Precision**	96.11%	96.87%	99.68%
	Recall	90.98%	93.58%	99.68%
	F1 Score	93.12%	94.92%	99.68%
BFlops		14810834		
Inference Time		0.043 Second	0.553 Second	0.553 Second
Size of Model		57.4MB		

Classification Report & Confusion Matrix

5 Epochs

```
For Training
              precision    recall  f1-score   support

           0       1.00      0.91      0.95       938
           1       0.94      1.00      0.97      1860
           2       1.00      0.99      0.99       435
           3       1.00      0.96      0.98       873

    accuracy                           0.97      4106
   macro avg       0.98      0.96      0.97      4106
weighted avg       0.97      0.97      0.97      4106

[[ 850   88    0    0]
 [   1 1857    0    2]
 [   0    4  431    0]
 [   2   34    1  836]]

For Testing
              precision    recall  f1-score   support

           0       0.99      0.94      0.96       154
           1       0.86      0.99      0.92       146
           2       1.00      0.86      0.93        44
           3       1.00      0.85      0.92        59

    accuracy                           0.94       403
   macro avg       0.96      0.91      0.93       403
weighted avg       0.94      0.94      0.94       403

[[144   10    0    0]
 [  1  145    0    0]
 [  0    6   38    0]
 [  1    8    0   50]]
```

10 Epochs

```
For Training
              precision    recall  f1-score   support

           0       1.00      0.93      0.96       918
           1       0.90      1.00      0.95      1790
           2       1.00      0.98      0.99       443
           3       1.00      0.88      0.93       955

    accuracy                           0.95      4106
   macro avg       0.98      0.94      0.96      4106
weighted avg       0.96      0.95      0.95      4106

[[ 851   67    0    0]
 [   0 1790    0    0]
 [   1   10  432    0]
 [   1  116    0  838]]

For Testing
              precision    recall  f1-score   support

           0       0.99      0.95      0.97       151
           1       0.82      1.00      0.90       139
           2       1.00      0.86      0.93        44
           3       1.00      0.72      0.84        69

    accuracy                           0.92       403
   macro avg       0.95      0.89      0.91       403
weighted avg       0.93      0.92      0.92       403

[[144    7    0    0]
 [  0  139    0    0]
 [  0    6   38    0]
 [  2   17    0   50]]
```
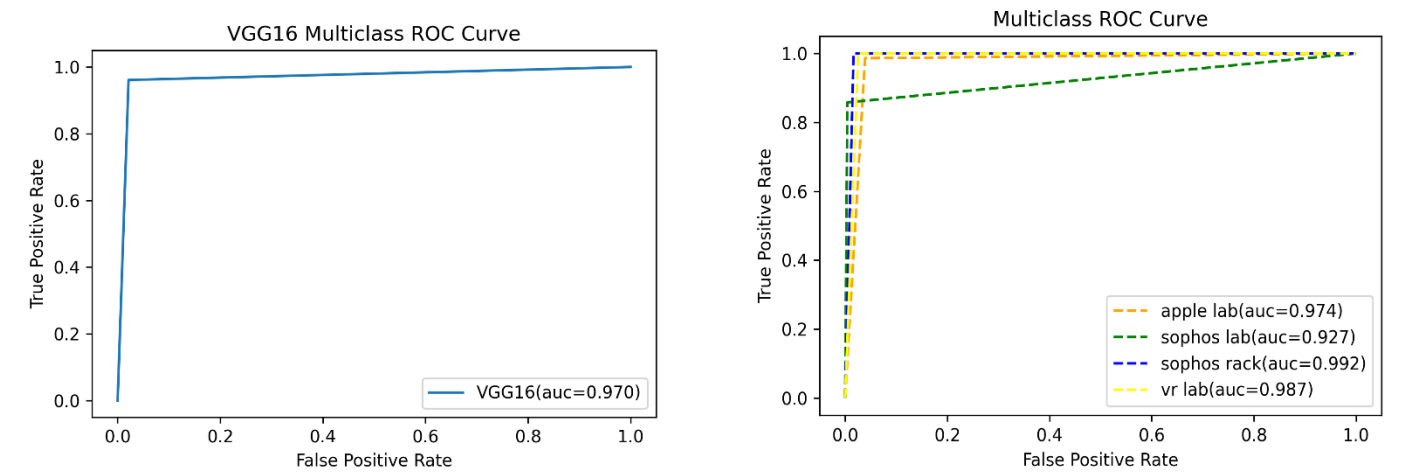
15 Epochs

```
For Training
              precision    recall  f1-score   support

           0       1.00      0.98      0.99       865
           1       0.99      1.00      1.00      1974
           2       1.00      1.00      1.00       432
           3       1.00      1.00      1.00       835

    accuracy                           1.00      4106
   macro avg       1.00      1.00      1.00      4106
weighted avg       1.00      1.00      1.00      4106

[[ 852   11    0    2]
 [   1 1972    0    1]
 [   0    0  432    0]
 [   0    0    0  835]]

For Testing
              precision    recall  f1-score   support

           0       0.99      0.99      0.99       146
           1       0.99      0.99      0.99       169
           2       1.00      1.00      1.00        38
           3       1.00      1.00      1.00        50

    accuracy                           1.00       403
   macro avg       1.00      1.00      1.00       403
weighted avg       1.00      1.00      1.00       403

[[145    1    0    0]
 [  1  168    0    0]
 [  0    0   38    0]
 [  0    0    0   50]]
```
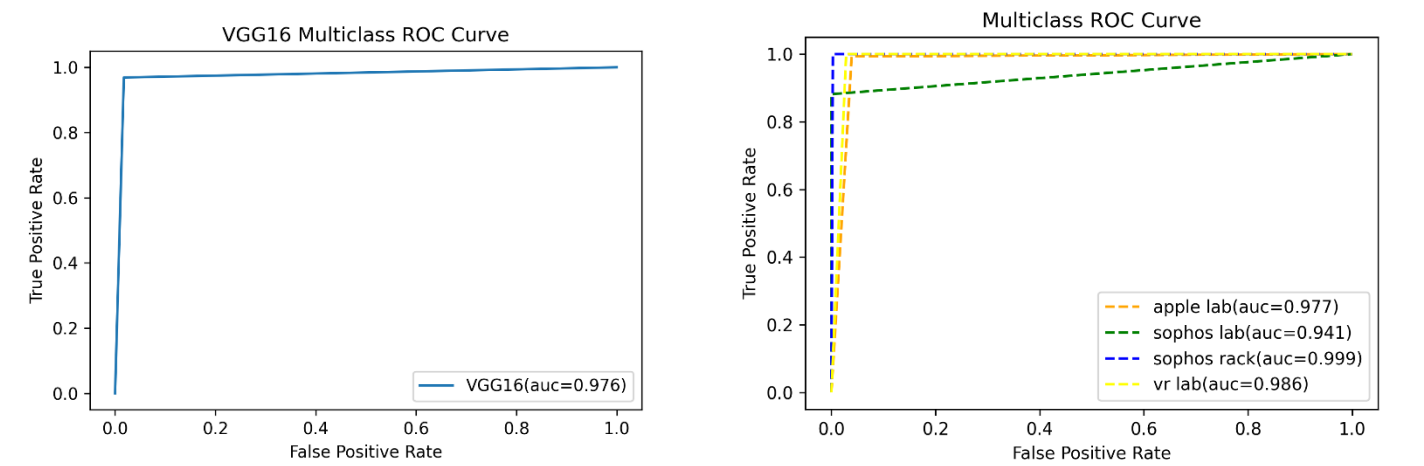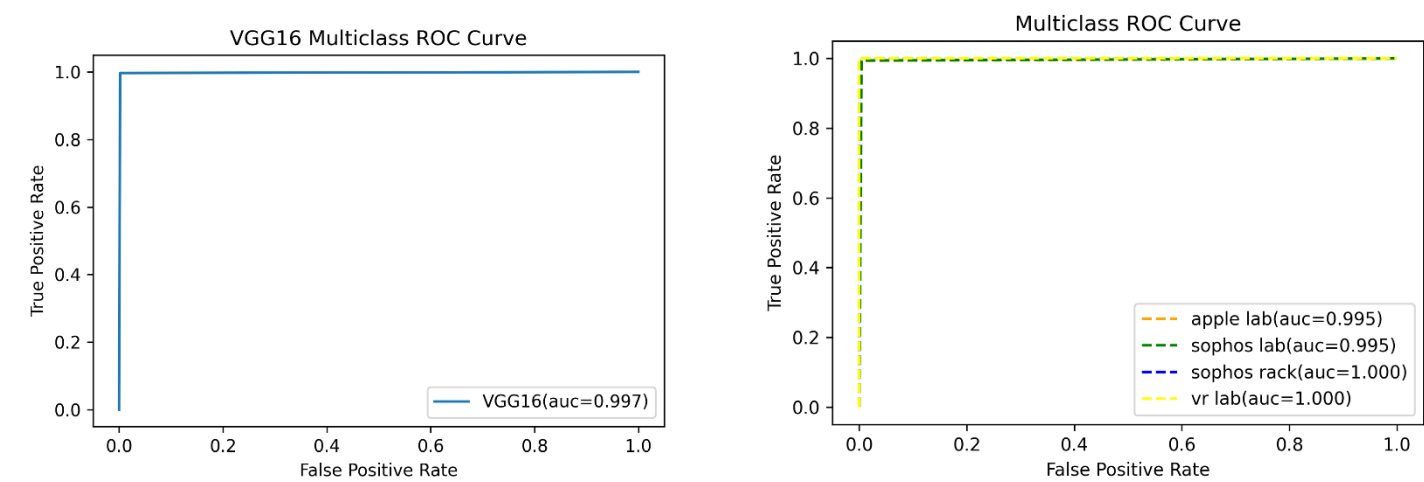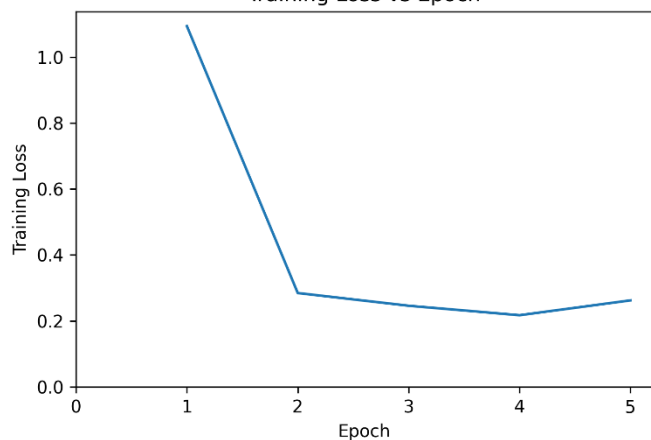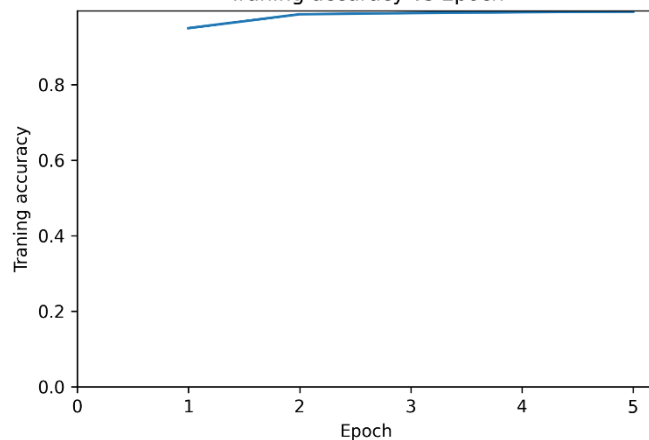
ROC Curve

5 Epochs

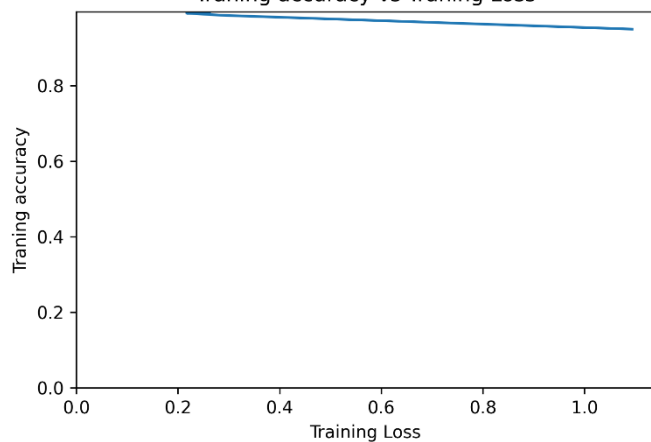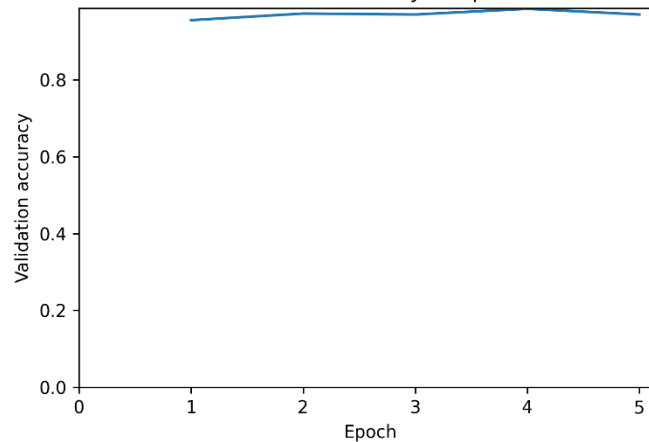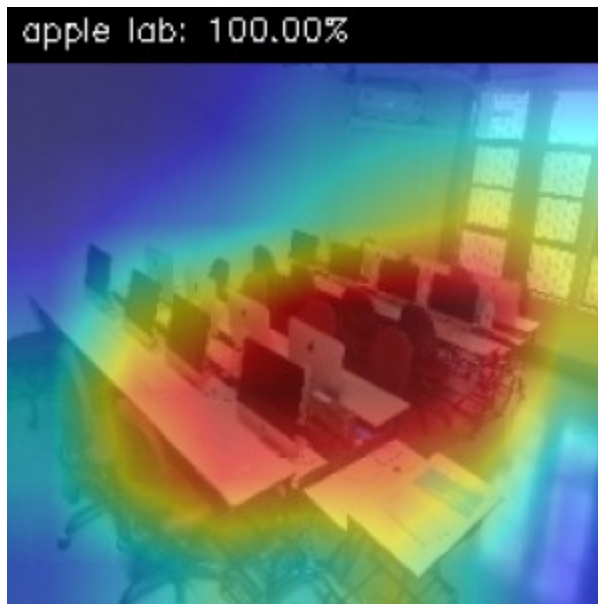
10 Epochs

15 Epochs

Graphs

5 Epochs
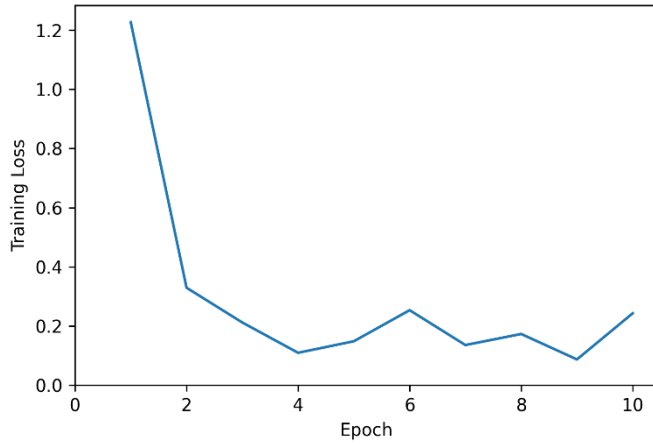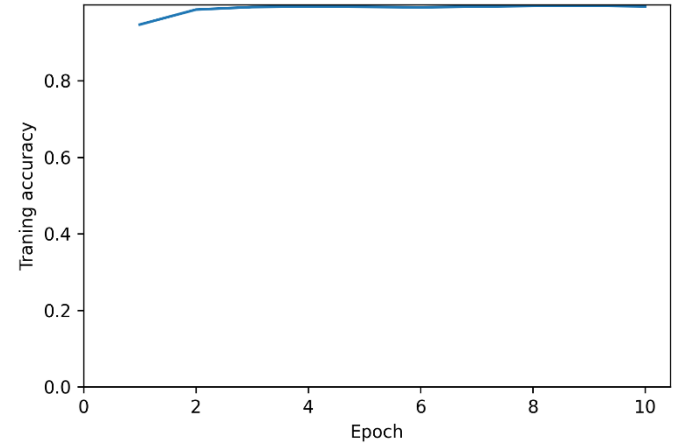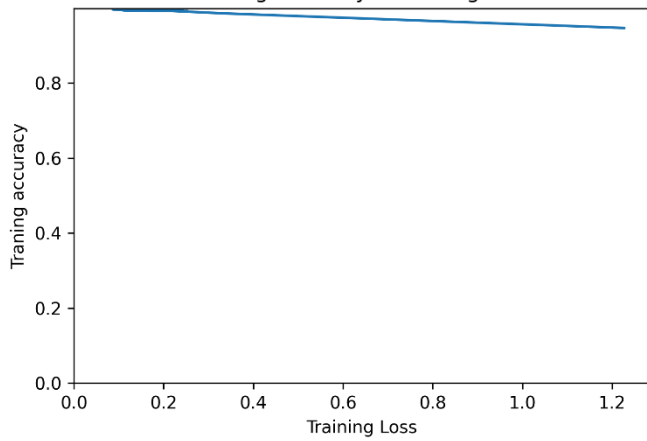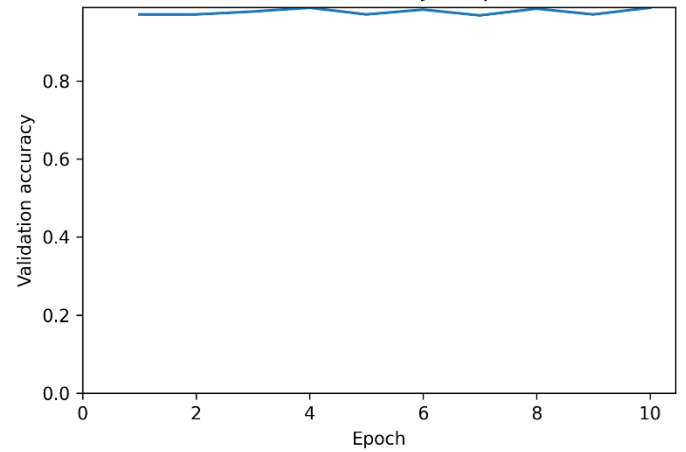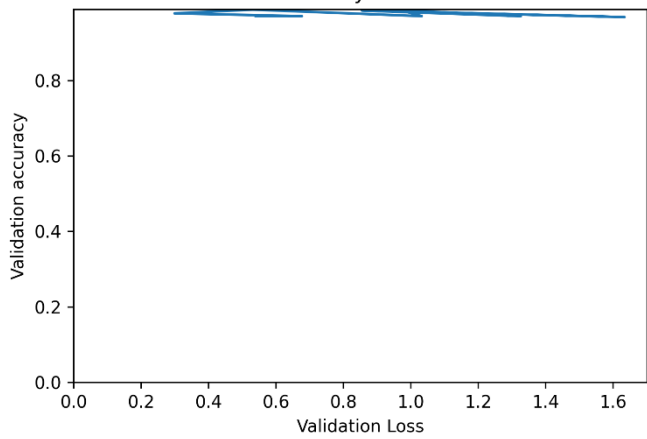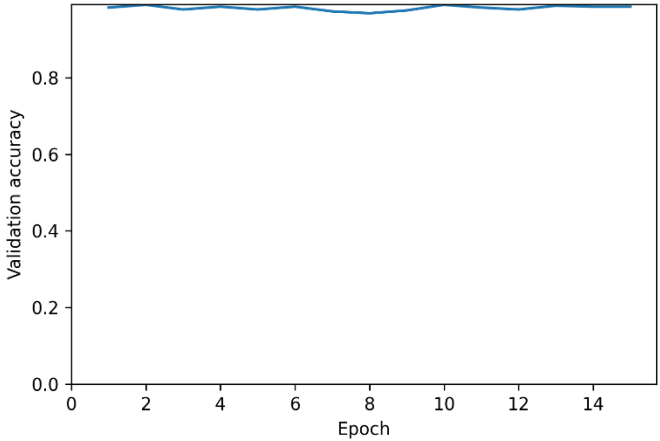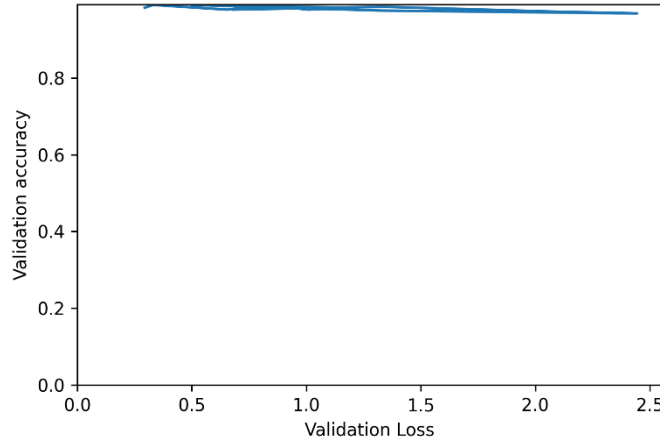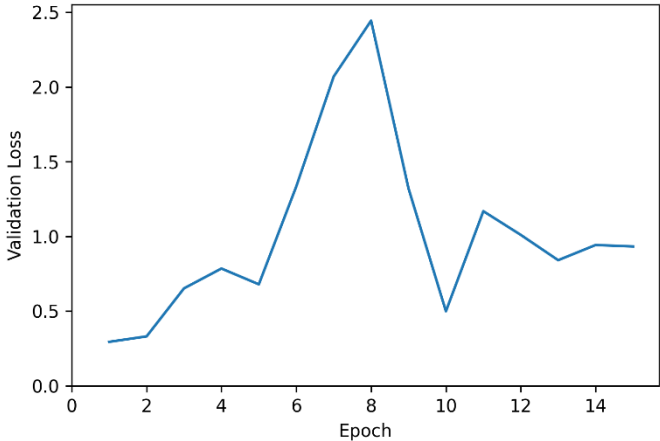
10 Epochs

15 Epochs

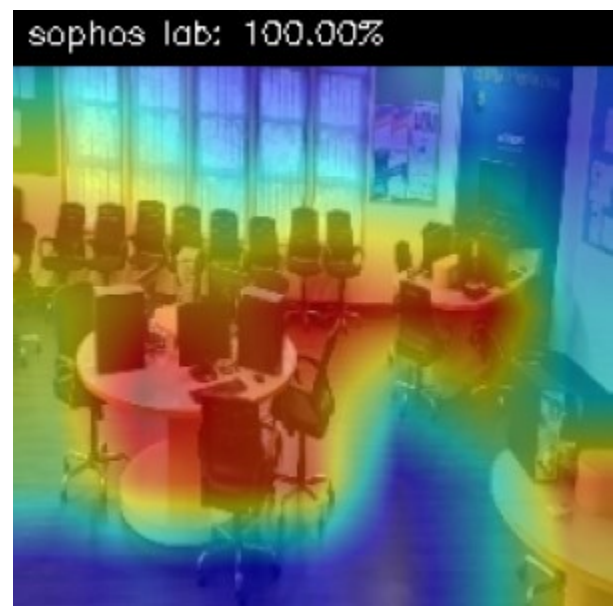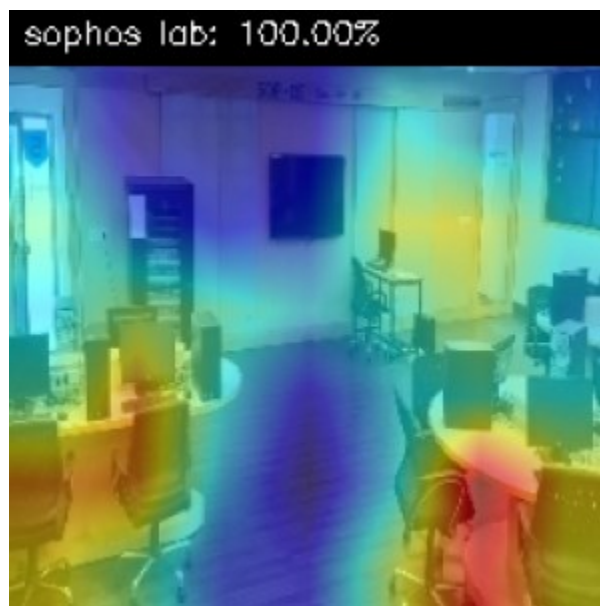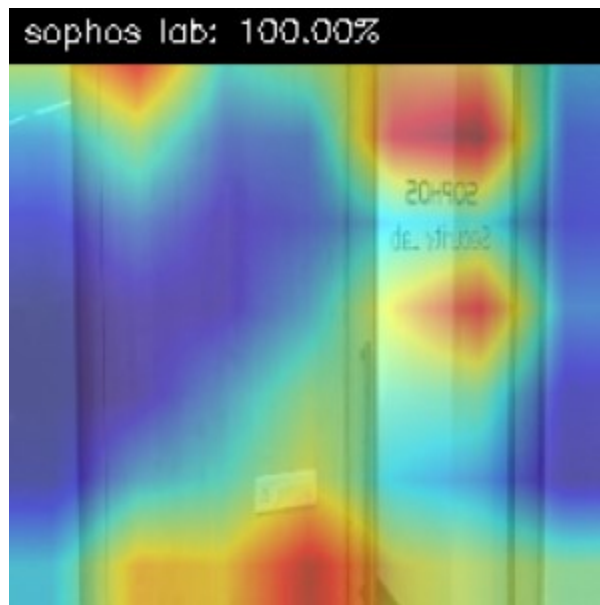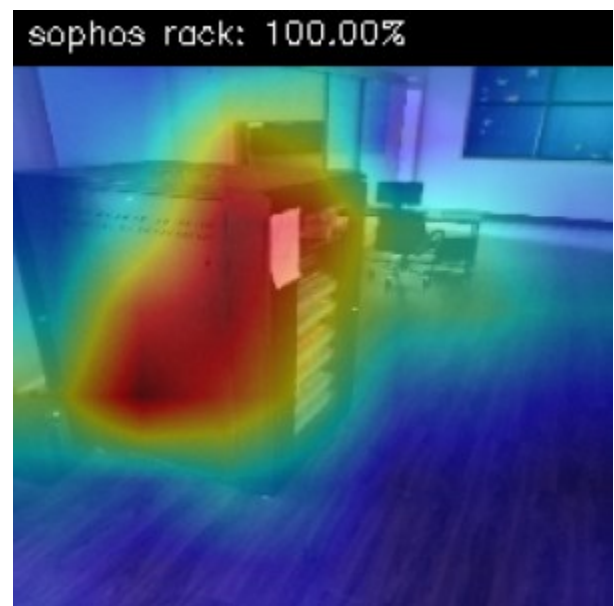# Gradient Class Activation Map (Grade-CAM) Heatmaps (10 Epochs)

Apple lab
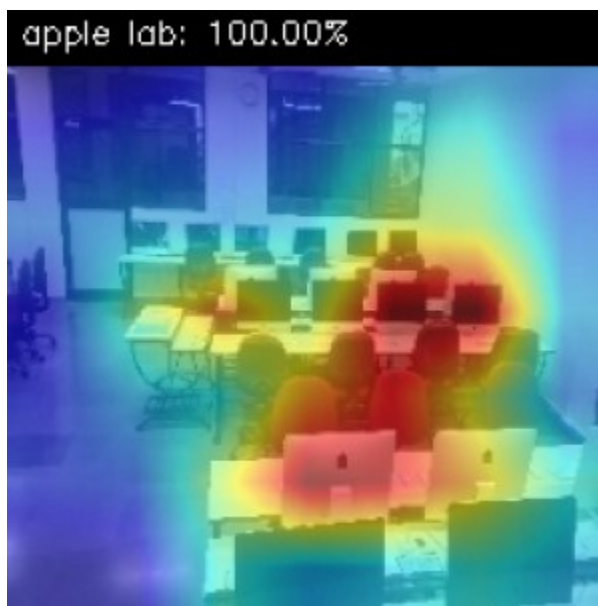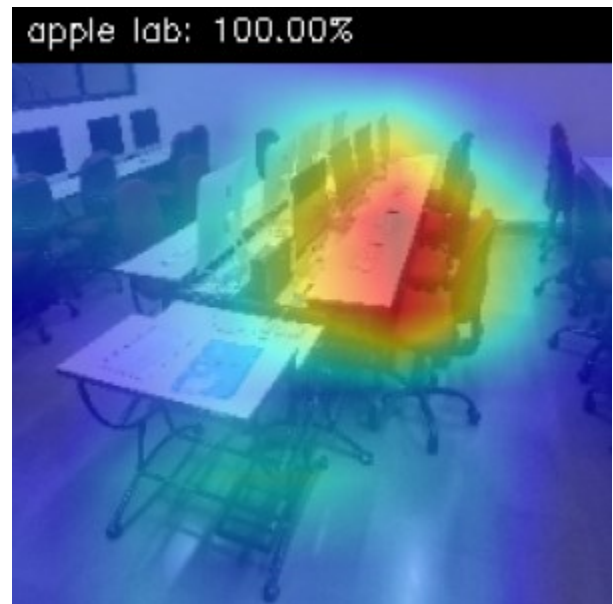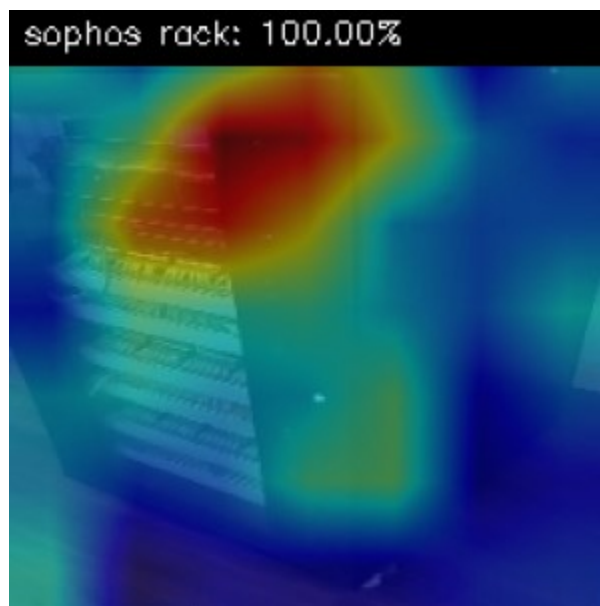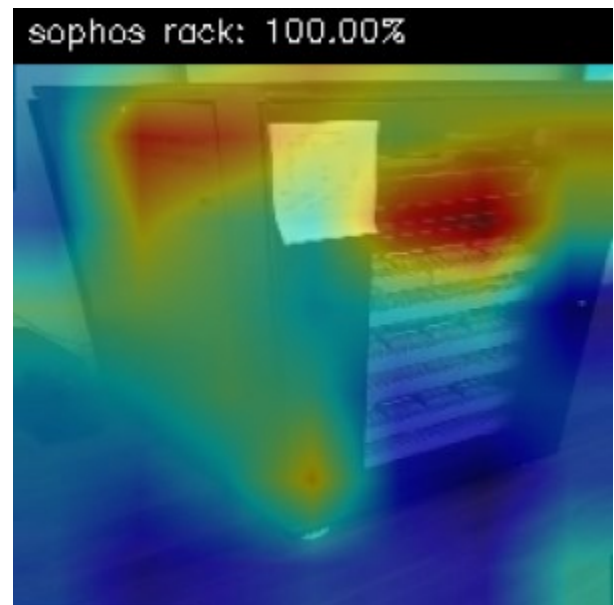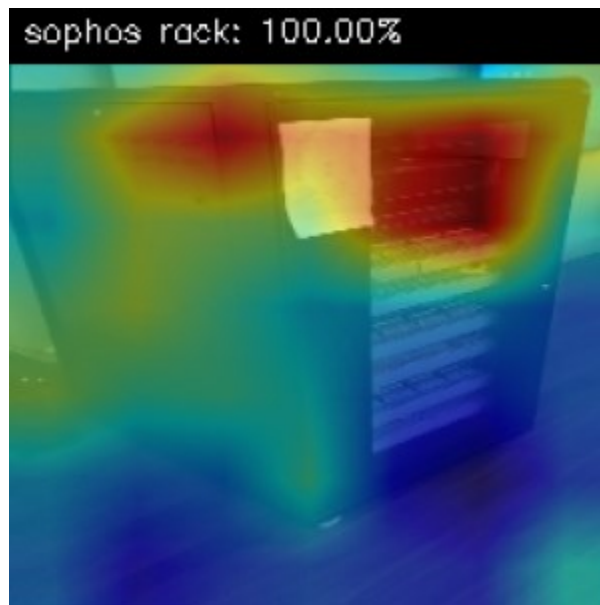
Sophos lab

Sophos rack

VR lab

vr lab: 100.00%   vr lab: 100.00%

vr lab: 100.00%   vr lab: 100.00%