HW 3-REPORT

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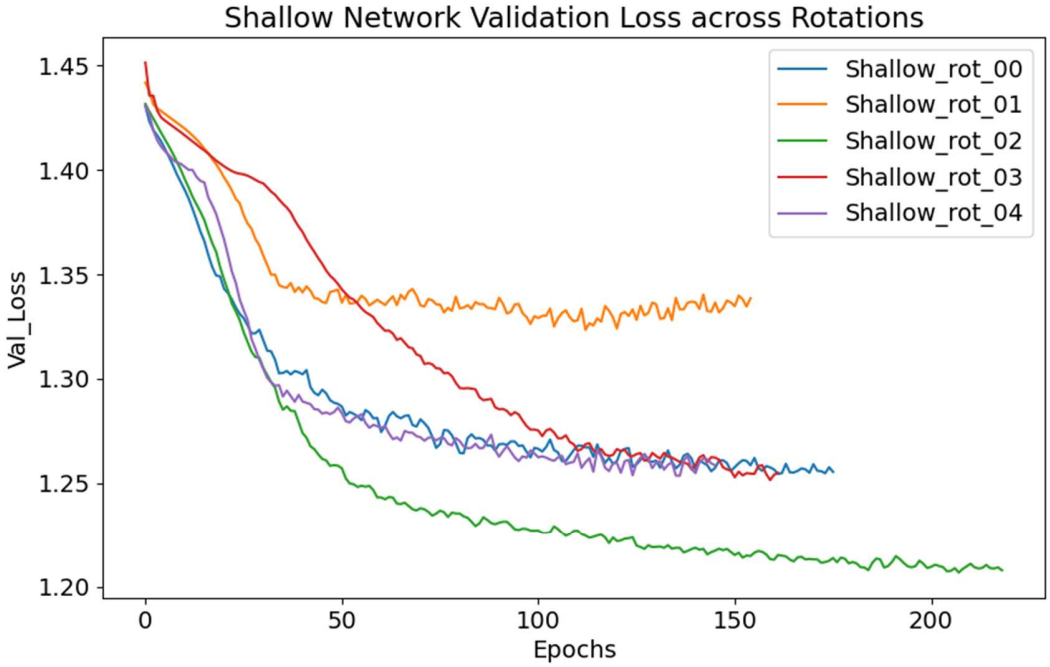
Figure 1:



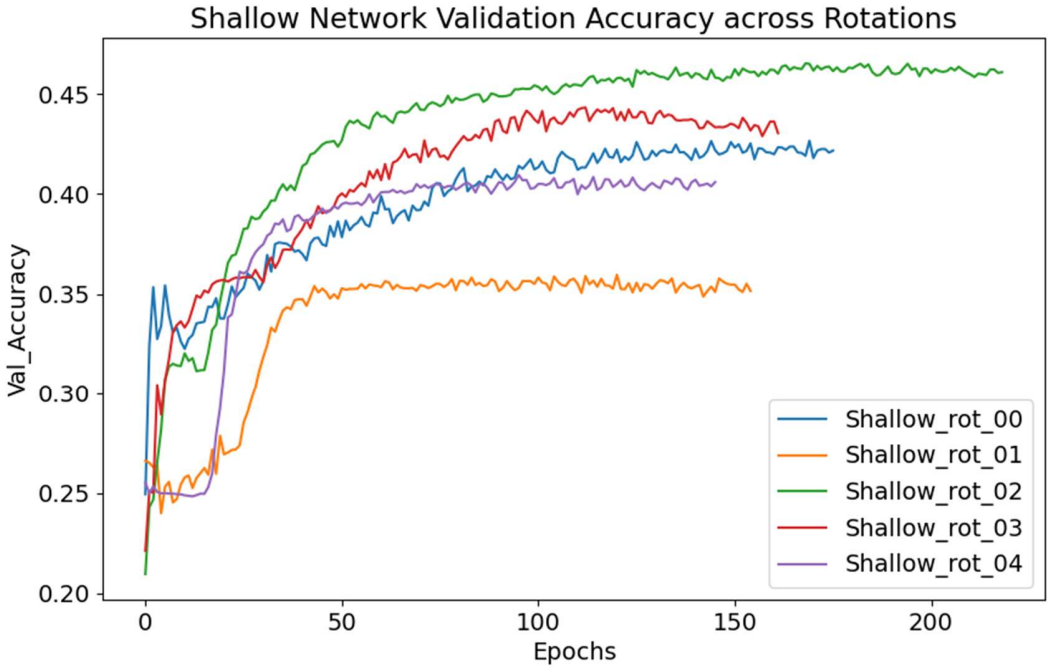


Figure 2:

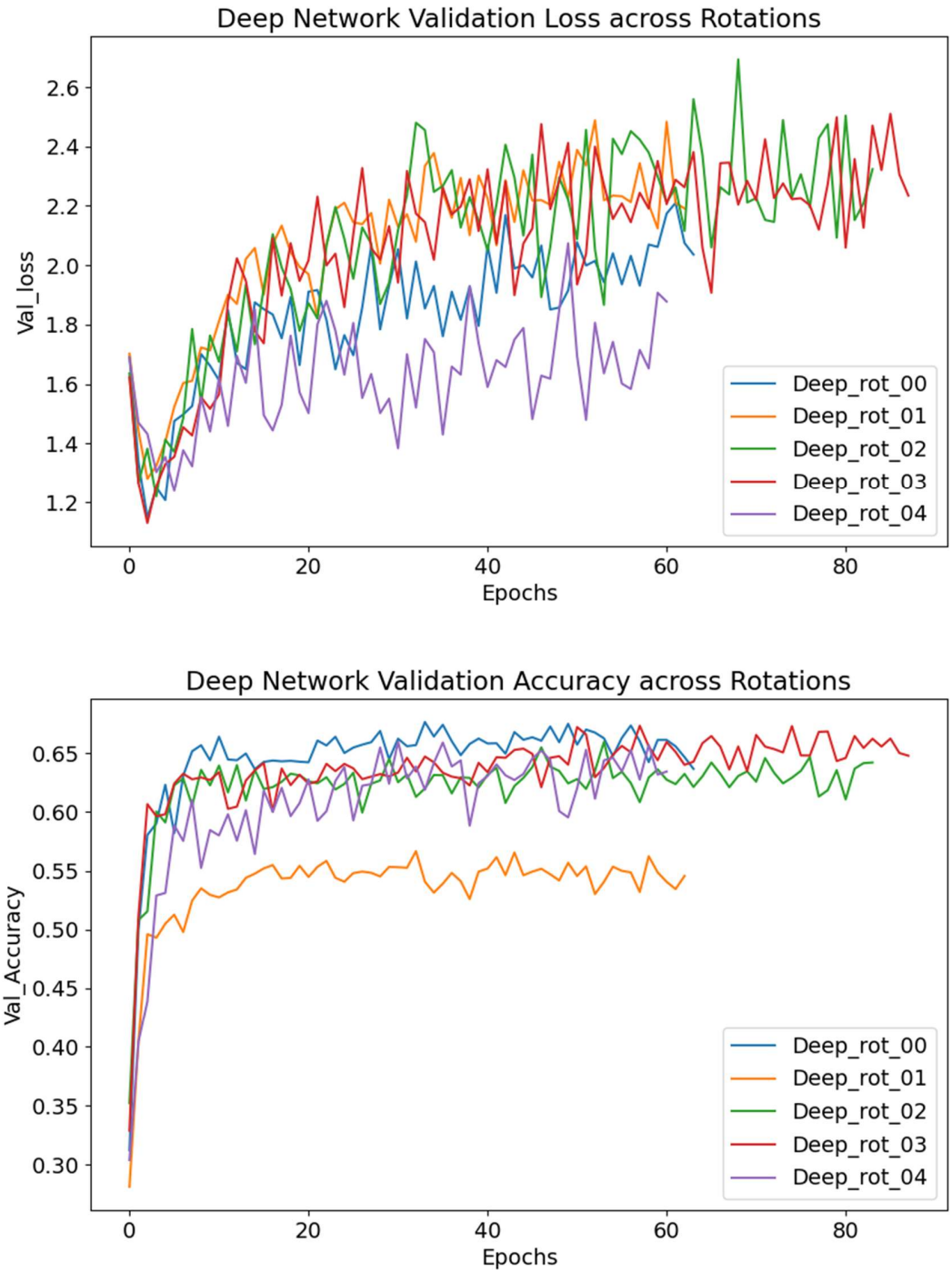

Deep Network Validation Loss across Rotations
Val_loss
Epochs
Deep_rot_00
Deep_rot_01
Deep_rot_02
Deep_rot_03
Deep_rot_04
Deep Network Validation Accuracy across Rotations
Val_Accuracy
Epochs
Deep_rot_00
Deep_rot_01
Deep_rot_02
Deep_rot_03
Deep_rot_04

Figure 3:

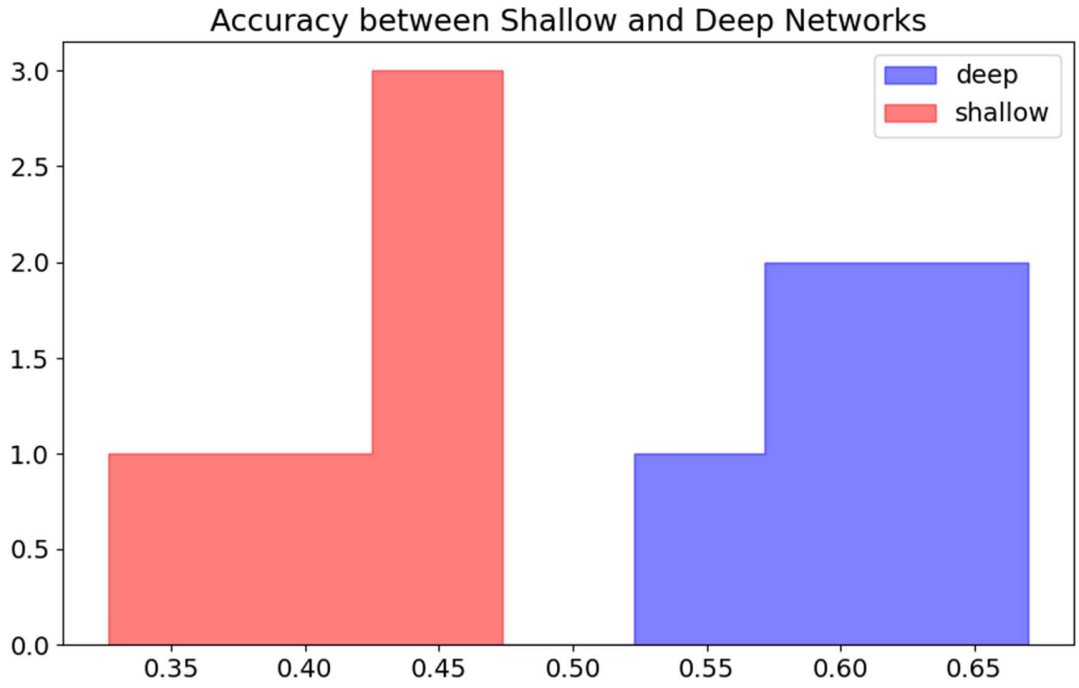
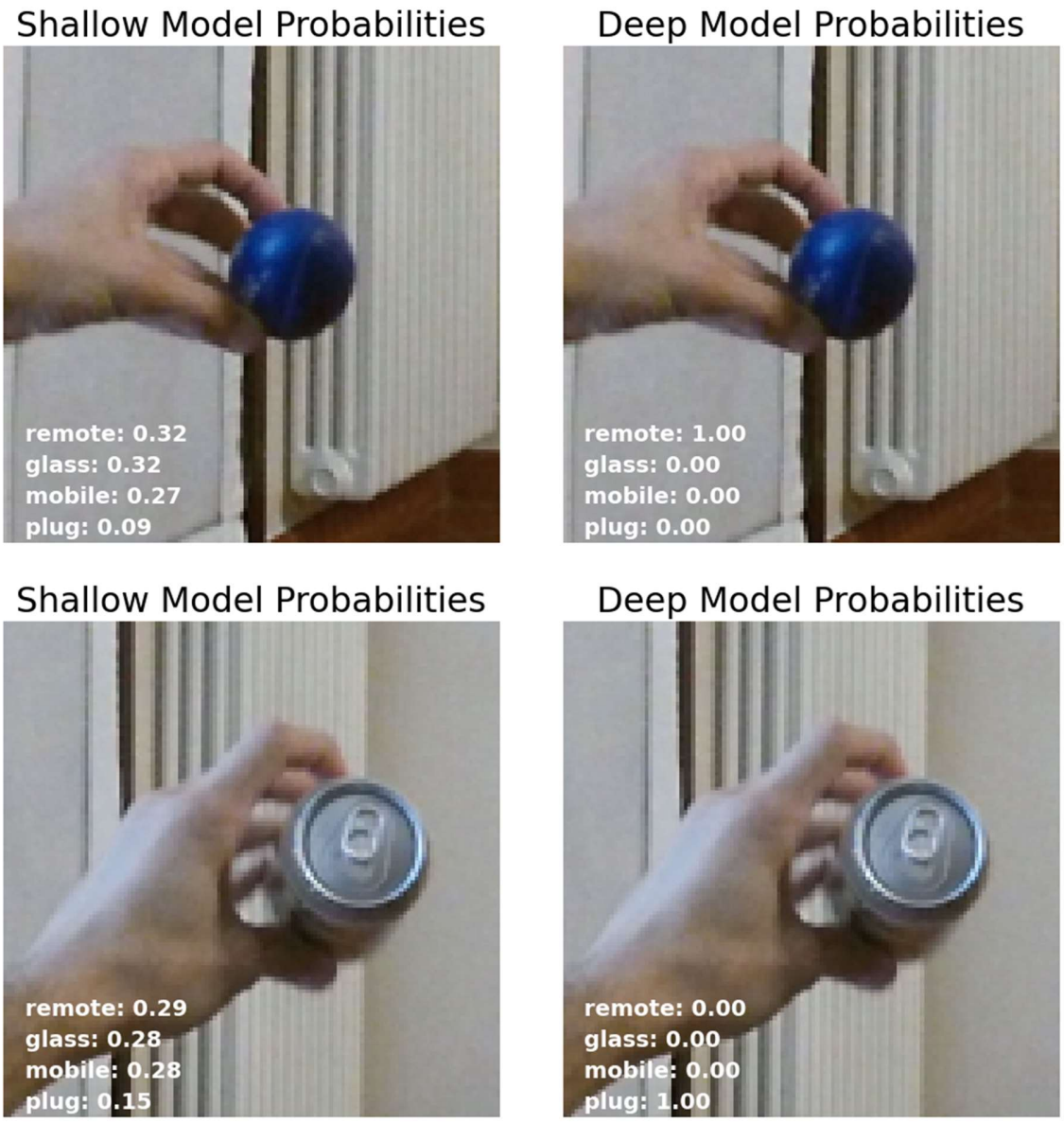
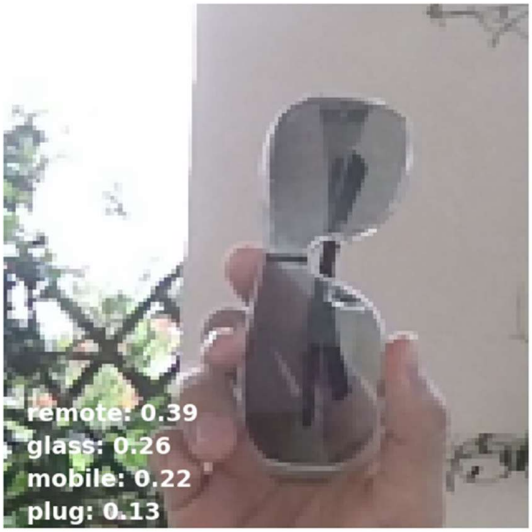

Accuracy between Shallow and Deep Networks
deep
shallow
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.35
0.40
0.45
0.50
0.55
0.60
0.65

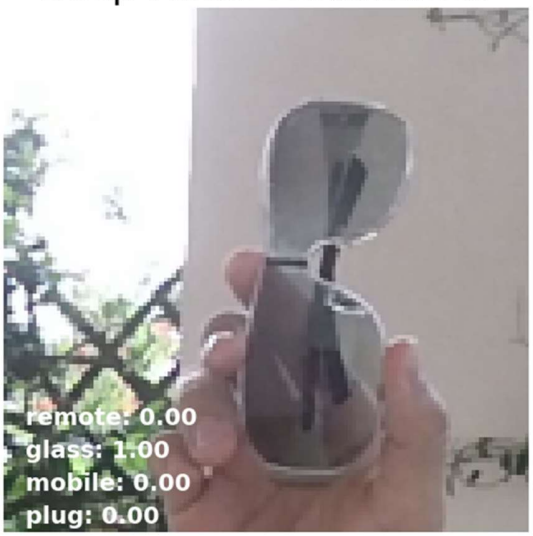
Figure 4: (10 test images)



Shallow Model Probabilities



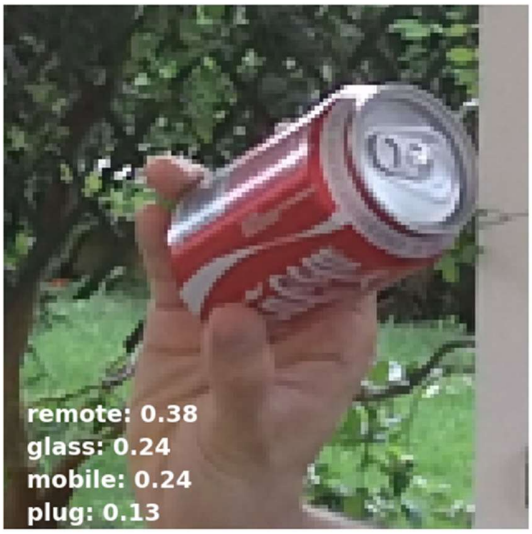
Deep Model Probabilities



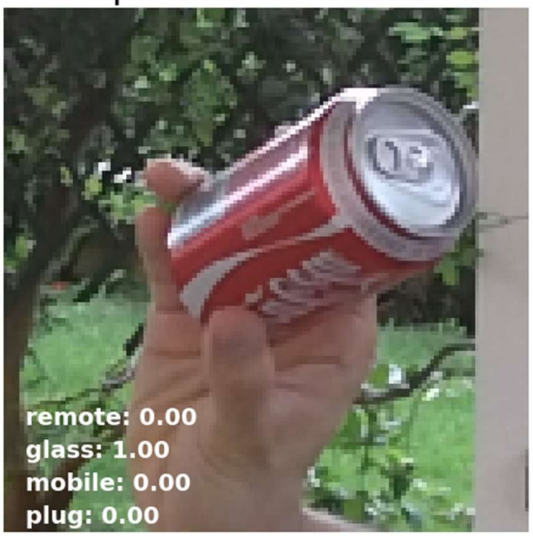
Shallow Model Probabilities

Deep Model Probabilities

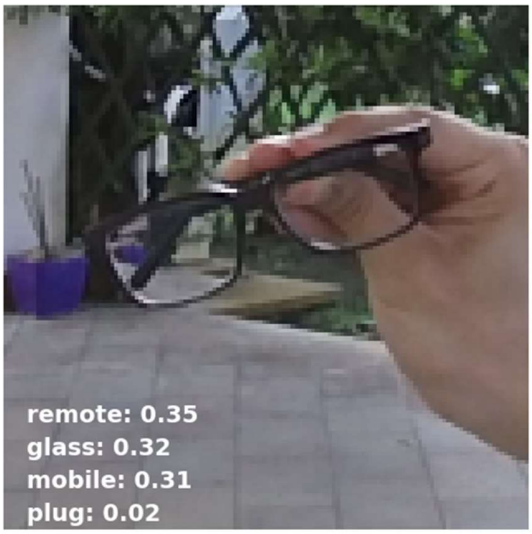
Shallow Model Probabilities



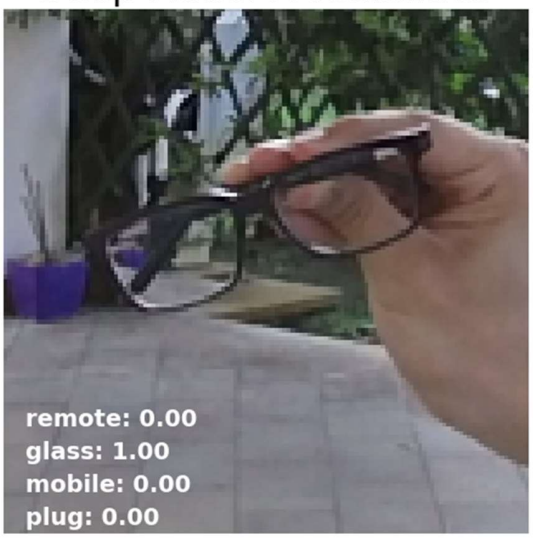
Deep Model Probabilities



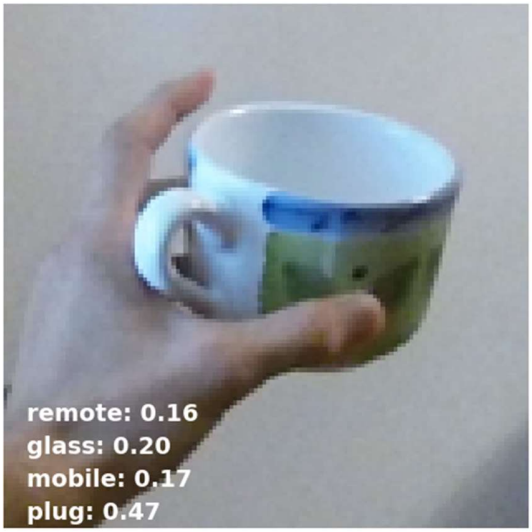
Shallow Model Probabilities



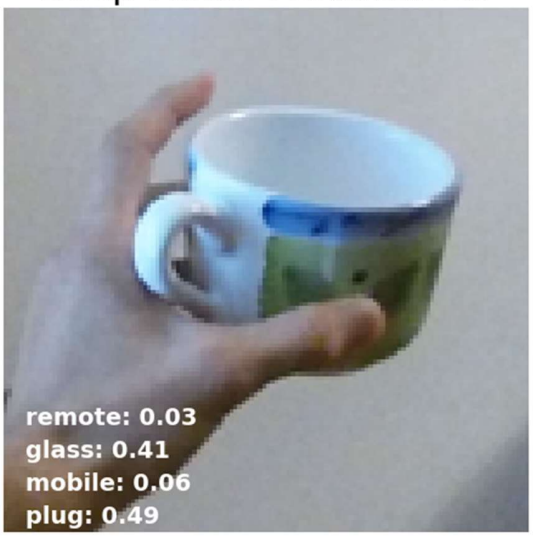
Deep Model Probabilities



Shallow Model Probabilities

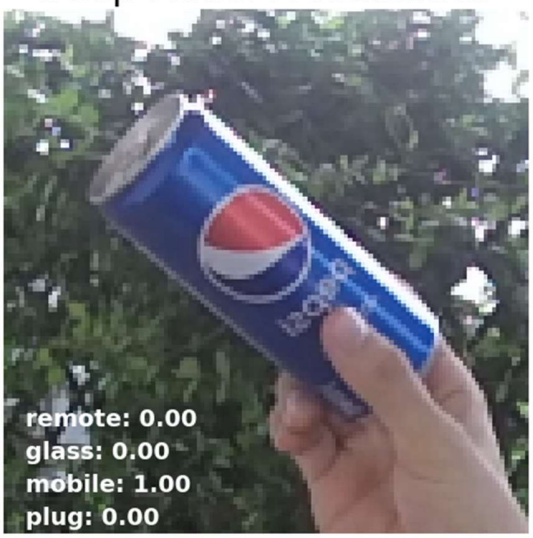


Deep Model Probabilities



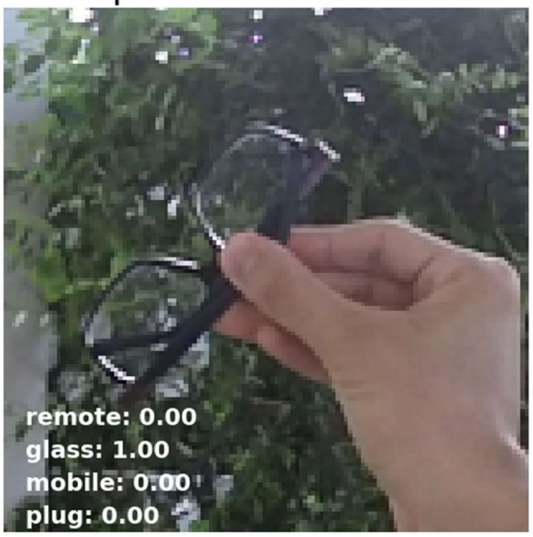
Shallow Model Probabilities

Deep Model Probabilities



Shallow Model Probabilities

Deep Model Probabilities

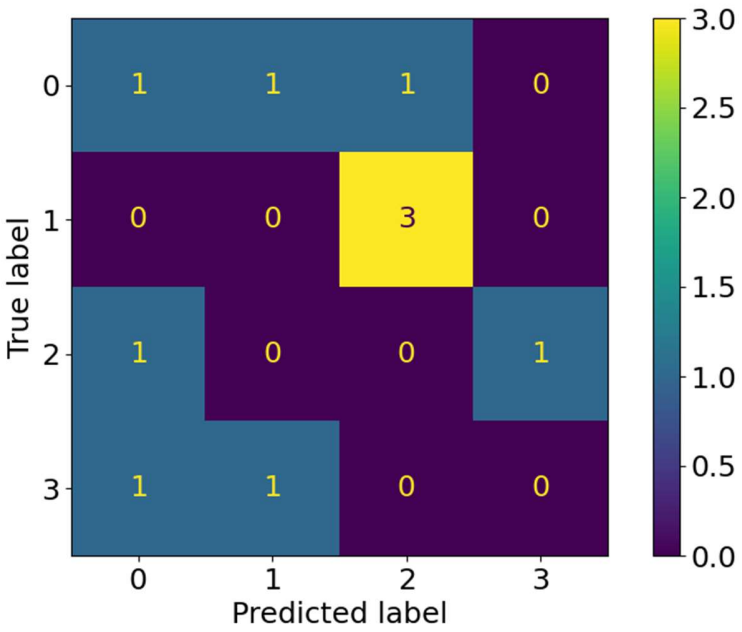


Shallow Model Probabilities

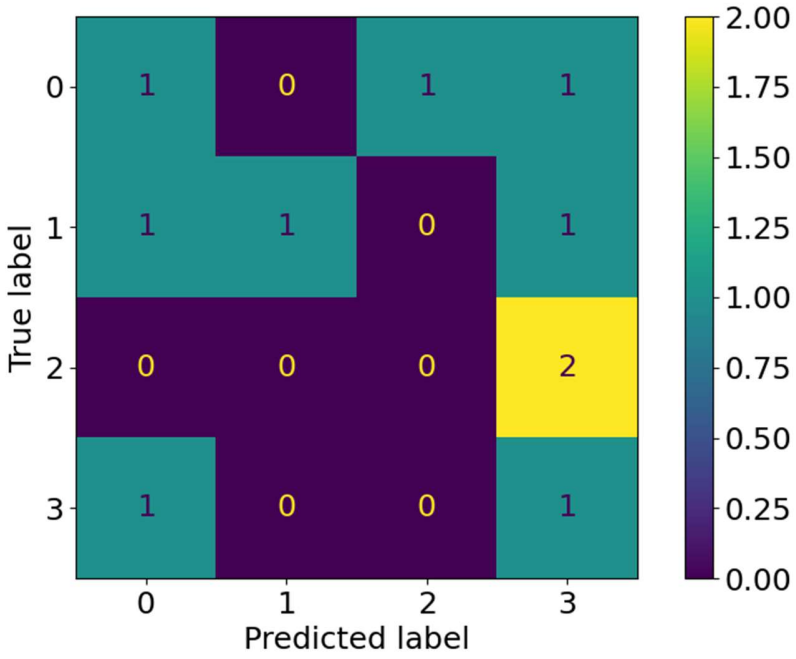
Deep Model Probabilities

Figure 5: Deep Model Confusion Matrices

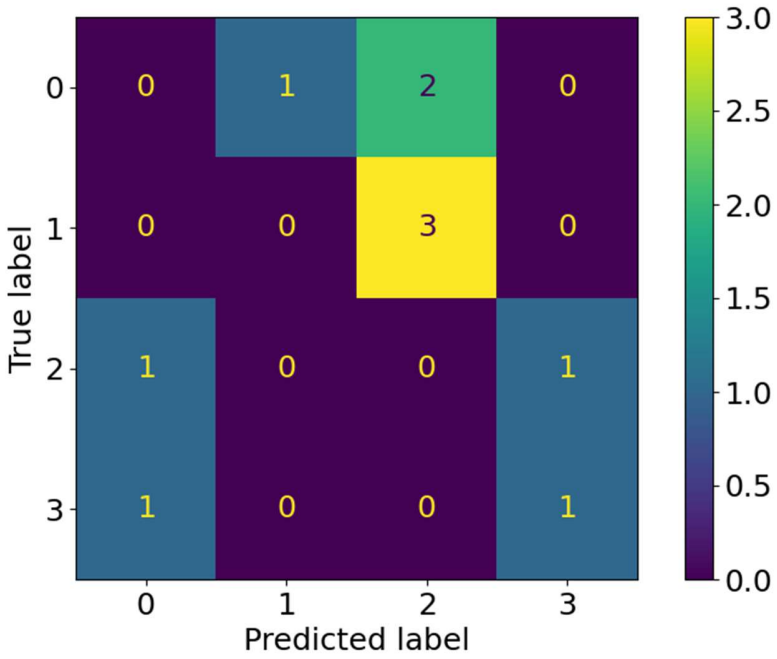
Deep-Model 0



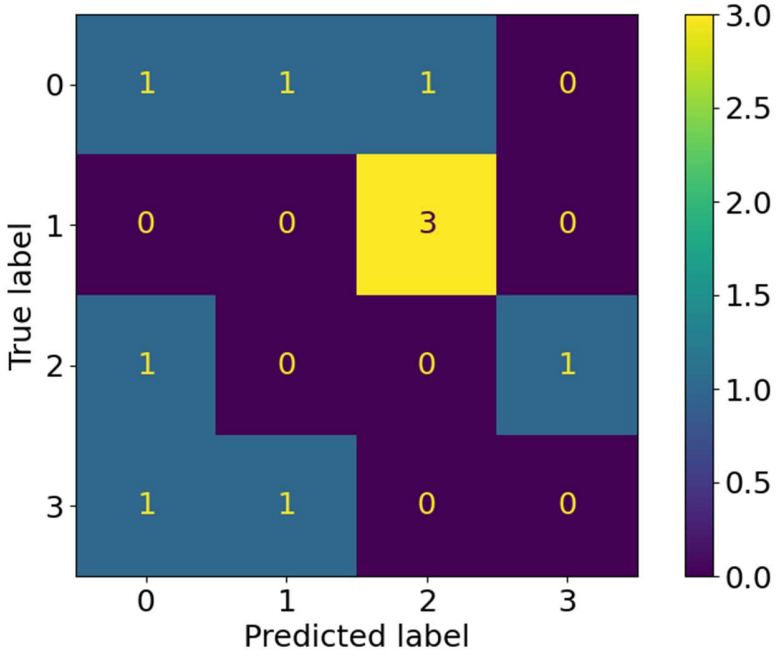
Deep-Model 1



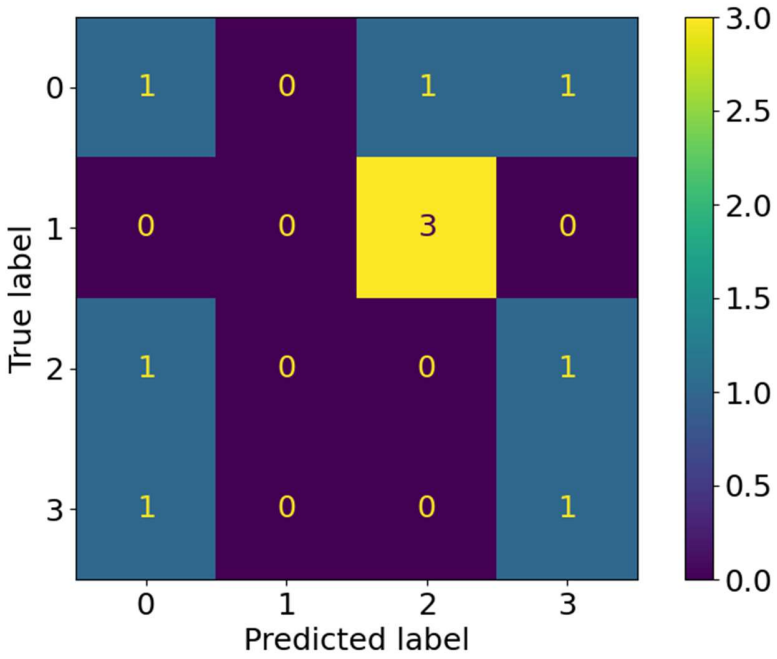
Deep-Model 2



Deep-Model 3

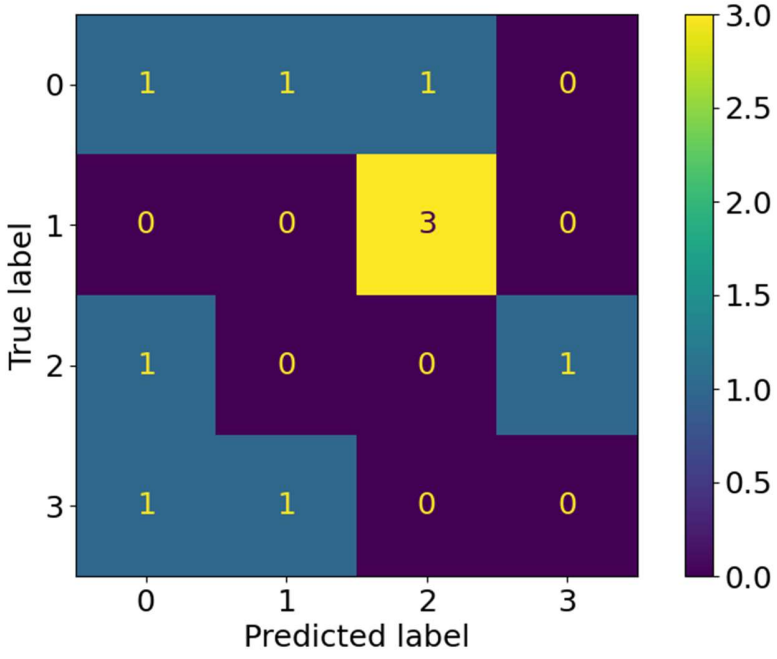


Deep-Model 4

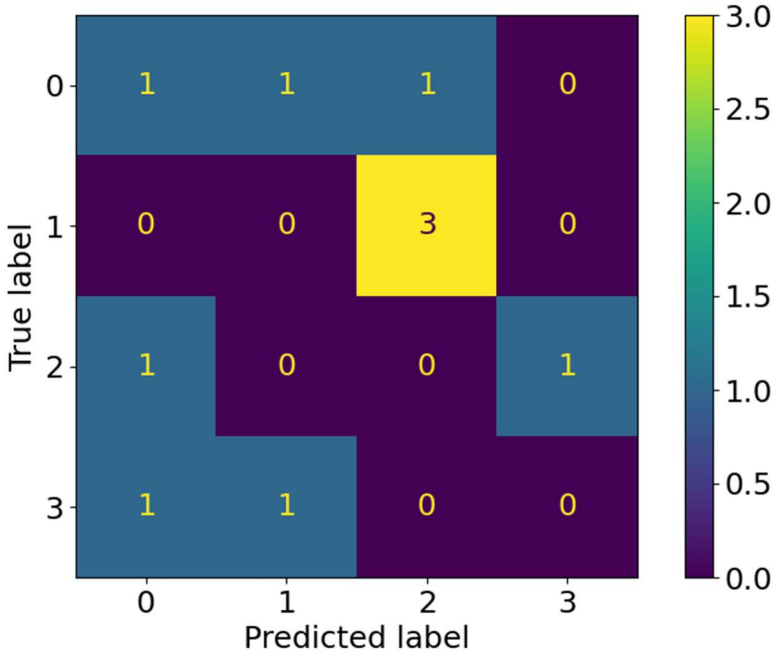


Shallow Model Confusion Matrices:

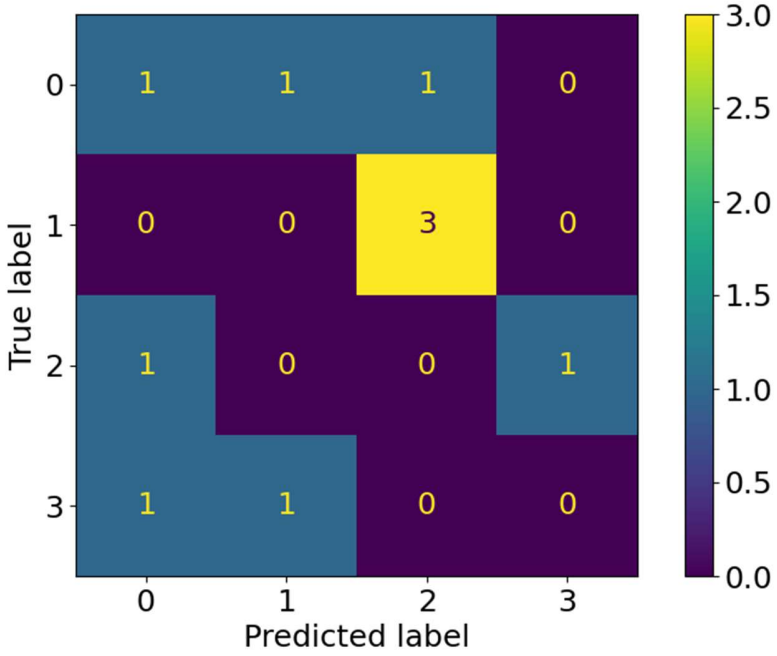
Shallow-Model 0



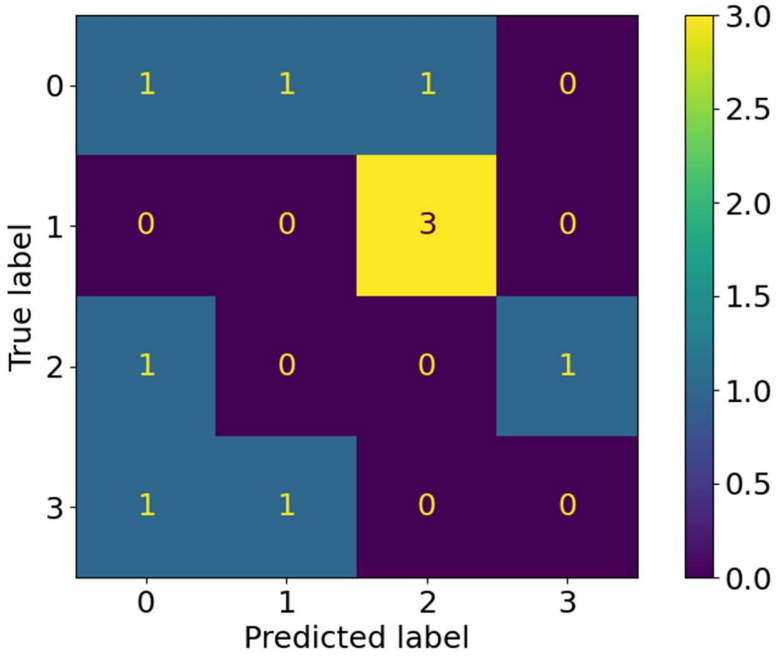
Shallow-Model 1



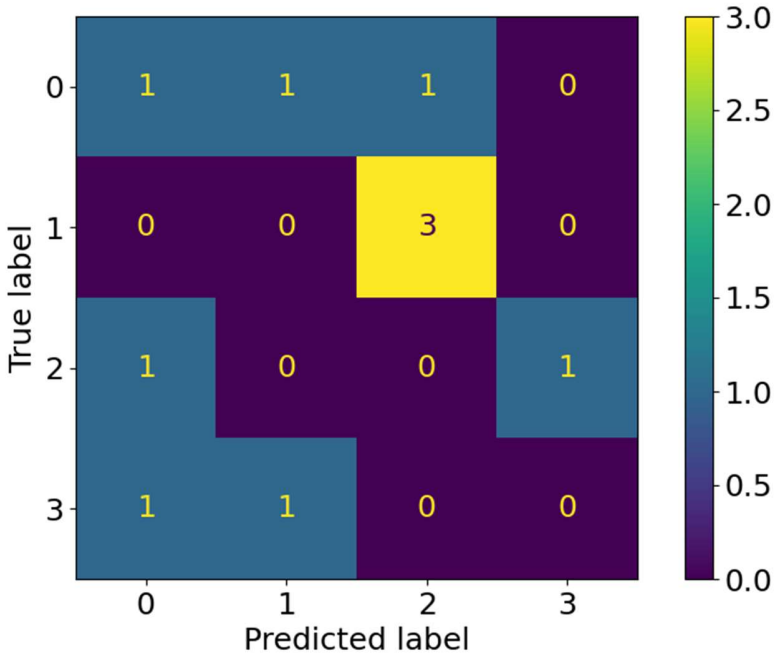
Shallow-Model 2



Shallow-Model 3



Shallow-Model 4



REFLECTION:

1Q) How many parameters were needed by your shallow and deep networks?

A) Shallow Model Parameters: 1934

Deep Model Parameters: 649716

2Q) What can you conclude from the validation accuracy learning curves for each of the shallow and deep networks? How confident are you that you have created models that you can trust?

A) The deep network outperforms the shallow network, with higher and more stable validation accuracy across different input rotations, suggesting better generalization and faster learning. The graphs indicate that the deep network is likely to be more trustworthy due to its higher and more stable validation accuracy.

3Q) Did your shallow or deep network perform better with respect to the test set? (no need for a statistical argument here)

A) My Deep network models performed better with respect to test set images.