

Analysis Report

Anshu Garg

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1. Observations for Original Data:

- The most accurately classified classes are 'car' and 'ship'.
- The most mistaken class is 'cat', that is only 48 percent.

2. Observations for Red Channel Data:

- The most accurately classified class is 'horse'.
- The most mistaken class is 'cat', that is only 46 percent.

3. Observations for Green Channel Data:

- The most accurately classified classes are 'horse' and 'car'.
- The most mistaken class is 'cat', that is only 48 percent.

4. Observations for Blue Channel Data:

- The most accurately classified class is 'truck' and then comes 'horse' and 'car' (similar to the accuracy results of other channels).
- The most mistaken class is 'cat', that is only 34 percent.

5. Conclusions

- The original class provides the maximum overall accuracy on test set, though the difference in accuracy with other class is not much. The reason might be because it is using all three channels thus it has maximum information.

Classes	Accuracy of Original	Accuracy of Red_channel	Accuracy of Green_channel	Accuracy of Blue_Channel
plane	77.27272727272727	70.45454545454545	68.18181818181819	75
car	87.5	78.125	84.375	84.375
bird	57.89473684210526	57.89473684210526	65.78947368421052	55.26315789473684
cat	48.83720930232558	46.51162790697674	48.83720930232558	34.883720930232556
deer	59.183673469387756	59.183673469387756	61.224489795918366	61.224489795918366
dog	65.625	65.625	68.75	59.375
frog	84.90566037735849	75.47169811320755	73.58490566037736	75.47169811320755
horse	84.375	84.375	84.375	81.25
ship	87.5	70.83333333333333	75	77.08333333333333
truck	68.96551724137932	75.86206896551724	65.51724137931035	86.20689655172414
Testset Accuracy	72.44	69.28	70.04	69.23

Figure 1: Result

- Individual channels can be used for different classes to improve the accuracy for example to identify 'truck' class, accuracy was high for Blue channel as compared to others, similarly for 'bird' and 'dog' class, green channel has higher accuracy compared to even original data. So, individual channel accuracy is useful.

P.S.: 0 represents Original Data, 1 represents Red channel data, 2 represents Green channel data, 3 represents Blue channel data in code and parameter files.