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ECGR 4105-001
HW4

https://github.com/Edward-Cloud9/HW4.git

1. The results for accuracy, precision and recall:

```
Linear:              precision    recall  f1-score   support

           0     0.9362    0.9362    0.9362        47
           1     0.9552    0.9552    0.9552        67

    accuracy                         0.9474       114
   macro avg     0.9457    0.9457    0.9457       114
weighted avg     0.9474    0.9474    0.9474       114

RBF:               precision    recall  f1-score   support

           0     1.0000    0.9787    0.9892        47
           1     0.9853    1.0000    0.9926        67

    accuracy                         0.9912       114
   macro avg     0.9926    0.9894    0.9909       114
weighted avg     0.9914    0.9912    0.9912       114

Poly:              precision    recall  f1-score   support

           0     1.0000    0.9574    0.9783        47
           1     0.9710    1.0000    0.9853        67

    accuracy                         0.9825       114
   macro avg     0.9855    0.9787    0.9818       114
weighted avg     0.9830    0.9825    0.9824       114
```

Accuracy results for Linear, RBF, and Poly: 94.7%, 99.1%, and 98.2% respectively at n = 5
Linear
Precision: 0.9552238805970149
Recall: 0.9552238805970149
RBF
Precision: 0.9852941176470589
Recall: 1.0
Poly
Precision: 0.9710144927536232
Recall: 1.0

Getting any higher for n and the accuracy for RBF and Poly slightly decreases.

	precision	recall	f1-score	support
0	0.9565	0.9362	0.9462	47
1	0.9559	0.9701	0.9630	67
accuracy			0.9561	114
macro avg	0.9562	0.9532	0.9546	114
weighted avg	0.9561	0.9561	0.9561	114

In comparison with the logistic regression with PCA, the RBF and Poly methods have better accuracy compared to this model.
Plotting caused issues, therefore no graphs are posted at the time of this report.

2. The loss results for linear, rbf, and poly methods:

```
Loss: 947860338641.9976 1279027590158.7593 1622321986946.383
```

In comparison to HW1 loss cost, this method seems to be at high values.

Due to coding errors for plotting, no graphs of plots at the time of writing this report.