

# CSE 474

## Assignment 3

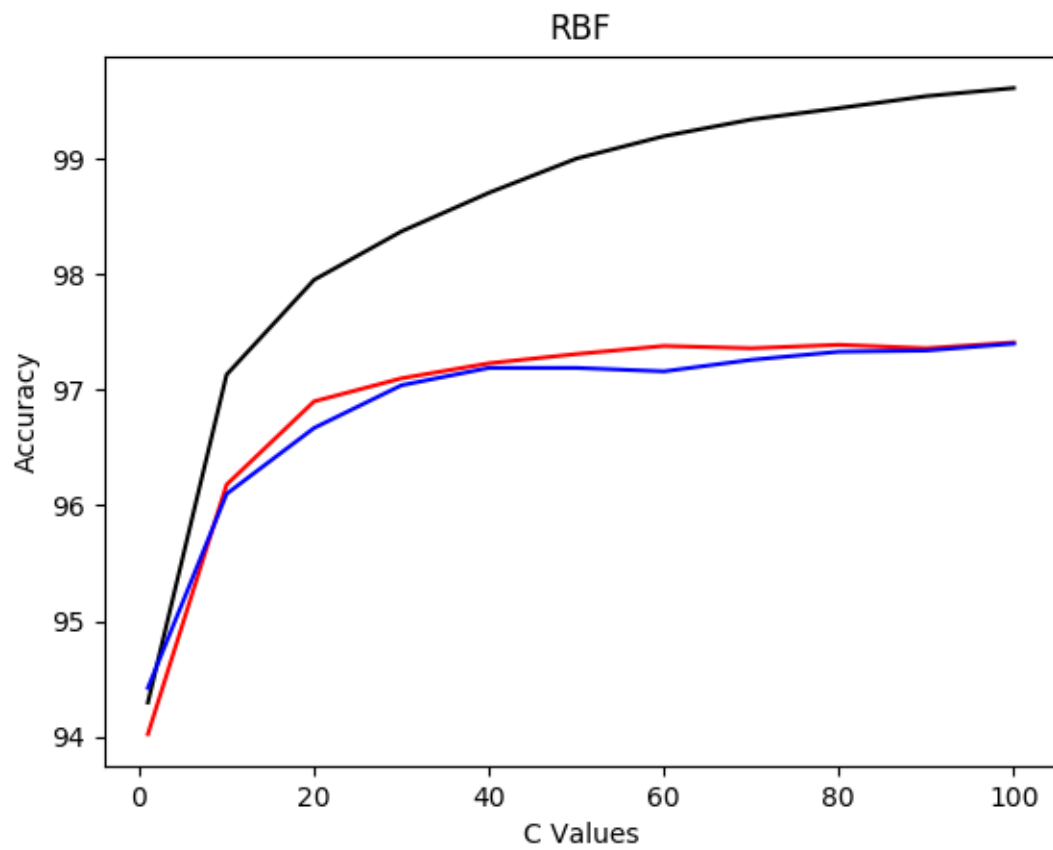
Classification and Regression

Group 30  
Franklin Pinnock  
James Hsu  
Yuzhe Wang

Method	Accuracy		
	Training Data	Validation Data	Test Data
Logistic Regression	84.922%	83.72%	84.2%

Method		Accuracy		
		Training Data	Validation Data	Test Data
SVM	Linear	97.286%	93.64%	93.78%
	RBF(Gamma=1)	100%	15.48%	17.14%
	RBF Default	94.29%	94.02%	94.42%
	RBF c=1	94.24%	94.02%	94.42%
	RBF c=10	97.13%	96.18%	96.10%
	RBF c=20	97.95%	96.90%	97.67%
	RBF c=30	98.37%	97.10%	97.04%
	RBF c=40	98.70%	97.23%	97.19%
	RBF c=50	99.00%	97.31%	97.19%
	RBF c=60	99.19%	97.38%	97.16%
	RBF c=70	99.34%	97.36%	97.26%
	RBF c=80	99.43%	97.39%	97.33%
	RBF c=90	99.54%	97.36%	97.34%
	RBF c=100	99.61%	97.41%	97.40%

- Logistic Regression performs worst than SVM on every data set
- Logistic Regression works better for lower dimensions and SVM works better for higher dimensions
- SVM gives higher accuracy using kernel
- When Gamma is too high, we lower accuracy and over fitting on validation data and test data.
- When Gamma is 0, the results are better on both validation and test data set.



- Our graph shows that as the value of  $c$  increases, the accuracy increases as well.