

Programming Assignment 3
Classification and Regression
CSE 574: Group – 49

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Logistic Regression:

Below are the experimental results for Logistic regression on training, validation, and testing dataset:

- Training set Accuracy: **86.984%**
- Validation set Accuracy: **85.6%**
- Testing set Accuracy: **85.57%**

Also, **params.pickle** file contains weight matrix W learnt for the logistic regression.

Extra Credit - Direct Multi-class Logistic Regression:

- Training set Accuracy: **93.39%**
- Validation set Accuracy: **92.43%**
- Testing set Accuracy: **92.67%**

Also, **params_bonus.pickle** file contains weight matrix W_b learnt for the Multi-class logistic regression.

Support Vector Machines:

- 1) Using linear kernel (all other parameters are kept default)

Training set Accuracy: **97.286%**
Validation set Accuracy: **93.64%**
Testing set Accuracy: **93.78%**

- 2) Using radial basis function with value of gamma setting to 1 (all other parameters are kept default).

Training set Accuracy: **100.0%**

Validation set Accuracy: **15.47999%**

Testing set Accuracy: **17.14%**

- 3) Using radial basis function with value of gamma setting to default (all other parameters are kept default).

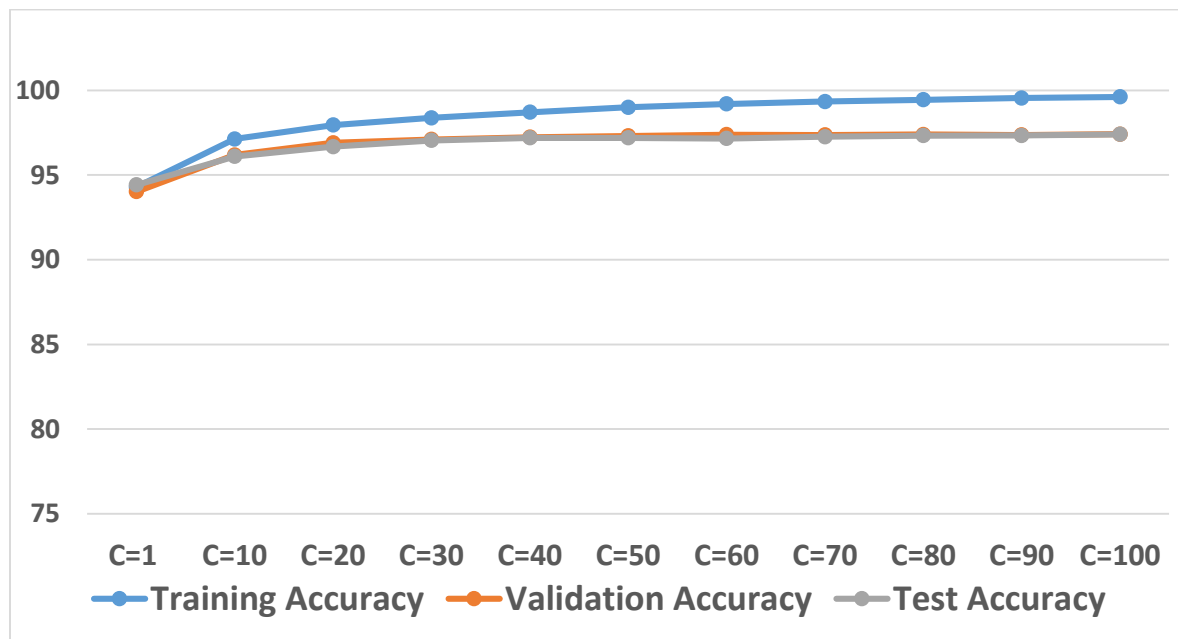
Training set Accuracy: **94.294%**

Validation set Accuracy: **94.020%**

Testing set Accuracy: **94.42%**

- 4) Using radial basis function with value of gamma setting to default and varying value of C (1, 10, 20, 30, ..., 100)

Below graph shows experimental results for Training, validation and testing accuracies for different values of C varying from 1, 10 to 100. As it can be seen from results that increasing penalty parameter C of error term increases accuracy for the dataset.



Note: y-axis ranges from 75-100 (%)