

## Report on ML offline 2

### ID : 1805027

#### ReadMe:

->The runAll() function loads a particular dataset from a csv file, trains a logistic regression model on the training dataset, uses it as weak learner in Adaboost implementation

->The function displays performance metrics for stand-alone logistic regression model and also for adaboost implementation with 5,10,15 and 20 boosting rounds.

->To run the script for any of the three datasets, simply write  
preprocessTeclo()/preprocessAdult()/preprocessCreditCard() in the first line of  
performanceMetrics() function depending on your choice of the three datasets(Teclo/Adult/CreditCard) respectively.

->The learning rate,no.of epochs,threshold can also be customized as per choice in lines 253-257.

->To show outputs for test set,comment out lines 273-291(if not already).

->To show outputs for training set,comment out lines 293-309(if not already).

->If the script is run after doing so,the outputs will be displayed in tabular format one after another.

## ***1)Dataset 1(TecloChurn):***

***Logistic regression:***

***Epochs : 5000***

Performance metric	Train set	Test set
Accuracy	0.792	0.789
Recall	0.562	0.565
Specificity	0.875	0.867
Precision	0.620	0.601
False discovery rate	0.380	0.399
F1 score	0.590	0.583

***Adaboost:***

***Epochs(Weak learners) : 1000***

No.of rounds	Train set	Test set
5	0.788	0.769
10	0.794	0.777

15	0.794	0.779
20	0.794	0.779

## 2)Dataset 2(Adult):

**Logistic regression:**

**Epochs : 5000**

Performance metric	Train set	Test set
Accuracy	0.838	0.837
Recall	0.525	0.515
Specificity	0.938	0.937
Precision	0.728	0.717
False discovery rate	0.272	0.283
F1 score	0.610	0.600

**Adaboost:**

**Epochs(Weak learners) : 1000**

No.of rounds	Train set	Test set
5	0.829	0.829
10	0.832	0.832
15	0.833	0.835
20	0.835	0.833

### ***3)Dataset 3(CreditCard):***

***Logistic regression:***

***Epochs : 5000***

Performance metric	Train set	Test set
Accuracy	0.995	0.995
Recall	0.817	0.793
Specificity	1.000	0.999
Precision	0.985	0.972
False discovery rate	0.015	0.028

F1 score	0.893	0.873
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***Adaboost:***

***Epochs(Weak learners) : 1000***

No.of rounds	Train set	Test set
5	0.995	0.995
10	0.995	0.995
15	0.995	0.995
20	0.995	0.995