=========================================

(Udacity) yaser@yaser-Inspiron-7520:~/Udacity/P5/P5\_YasserAlnakhli/scripts$ ./poi\_id\_2.py

/usr/local/lib/python2.7/dist-packages/sklearn/cross\_validation.py:44: DeprecationWarning: This module was deprecated in version 0.18 in favor of the model\_selection module into which all the refactored classes and functions are moved. Also note that the interface of the new CV iterators are different from that of this module. This module will be removed in 0.20.

"This module will be removed in 0.20.", DeprecationWarning)

Dataset Exploration:

Data points: 146

# of POI: 18

# of not POI: 128

/usr/local/lib/python2.7/dist-packages/sklearn/feature\_selection/univariate\_selection.py:113: UserWarning: Features [19 20 21 22 23] are constant.

UserWarning)

/usr/local/lib/python2.7/dist-packages/sklearn/feature\_selection/univariate\_selection.py:114: RuntimeWarning: invalid value encountered in divide

f = msb / msw

23 best features: ['to\_messages', 'deferral\_payments', 'bonus\_log', 'expenses', 'deferred\_income', 'from\_poi\_to\_this\_person', 'salary\_log', 'shared\_receipt\_with\_poi', 'loan\_advances', 'from\_messages', 'other', 'exercised\_stock\_options\_log', 'director\_fees', 'total\_stock\_value\_log', 'bonus', 'total\_stock\_value', 'from\_this\_person\_to\_poi', 'total\_payments\_log', 'long\_term\_incentive', 'restricted\_stock', 'salary', 'total\_payments', 'exercised\_stock\_options']

['poi', 'to\_messages', 'deferral\_payments', 'bonus\_log', 'expenses', 'deferred\_income', 'from\_poi\_to\_this\_person', 'salary\_log', 'shared\_receipt\_with\_poi', 'loan\_advances', 'from\_messages', 'other', 'exercised\_stock\_options\_log', 'director\_fees', 'total\_stock\_value\_log', 'bonus', 'total\_stock\_value', 'from\_this\_person\_to\_poi', 'total\_payments\_log', 'long\_term\_incentive', 'restricted\_stock', 'salary', 'total\_payments', 'exercised\_stock\_options']

Accuracy with LR: 0.744186

recall with LR: 0.200000

precision with LR: 0.125000

the F1 score with LR is: 0.153846

=========================================

Accuracy with NB: 0.883721

recall with NB: 0.400000

precision with NB: 0.500000

the F1 score with NB is: 0.444444

============= look above ============================

Accuracy of scalled features NB: 0.465116

recall of scalled features NB: 0.800000

precision of scalled features NB: 0.153846

the F1 score of scalled features NB: 0.258065

=================BernoulliNB========================

Accuracy of scalled features BernoulliNB: 0.813953

recall of scalled features BernoulliNB: 0.800000

precision of scalled features BernoulliNB: 0.363636

the F1 score of scalled featuresBernoulliNB: 0.500000

=========================================

Accuracy with DTree: 0.860465

recall with DTree: 0.200000

precision with DTree: 0.333333

the F1 score with DTree is: 0.250000

=========================================

Accuracy of scalled featuresand tunned with DTree: 0.837209

recall of scalled features and tunned with DTree: 0.200000

precision of scalled features and tunned with DTree: 0.250000

the F1 score of scalled features and tunned with DTree is: 0.222222

=========================================

Accuracy with MLPClassifier: 0.813953

recall with MLPClassifier: 0.600000

precision with MLPClassifier: 0.333333

the F1 score with MLPClassifier is: 0.428571

=========================================

/usr/local/lib/python2.7/dist-packages/sklearn/neural\_network/multilayer\_perceptron.py:563: ConvergenceWarning: Stochastic Optimizer: Maximum iterations reached and the optimization hasn't converged yet.

% (), ConvergenceWarning)

Accuracy with MLPClassifier scaled features: 0.860465

recall with MLPClassifier scaled features: 0.200000

precision with MLPClassifier scaled features: 0.333333

the F1 score with MLPClassifier scaled features is 0.250000

=========================================

Accuracy with tunned MLPClassifier: 0.883721

recall with tunned MLPClassifier: 0.000000

/usr/local/lib/python2.7/dist-packages/sklearn/metrics/classification.py:1113: UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 due to no predicted samples.

'precision', 'predicted', average, warn\_for)

precision with tunned MLPClassifier: 0.000000

./poi\_id\_2.py:393: RuntimeWarning: invalid value encountered in double\_scalars

F1 = 2 \* (precision \* recall) / (precision + recall)

the F1 score with tunned MLPClassifier is: nan

=========================================

================= LR ========================

LogisticRegression(C=1.0, class\_weight=None, dual=False, fit\_intercept=True,

intercept\_scaling=1, max\_iter=100, multi\_class='ovr', n\_jobs=1,

penalty='l2', random\_state=None, solver='liblinear', tol=0.0001,

verbose=0, warm\_start=False)

Accuracy: 0.78420 Precision: 0.18003 Recall: 0.17400 F1: 0.17696 F2: 0.17517

Total predictions: 15000 True positives: 348 False positives: 1585 False negatives: 1652 True negatives: 11415

================== NB =======================

GridSearchCV(cv=None, error\_score='raise', estimator=GaussianNB(priors=None),

fit\_params={}, iid=True, n\_jobs=1,

param\_grid={'priors': [None, [0.1, 0.9], [0.2, 0.8]]},

pre\_dispatch='2\*n\_jobs', refit=True, return\_train\_score=True,

scoring=None, verbose=0)

Accuracy: 0.73827 Precision: 0.22626 Recall: 0.39800 F1: 0.28851 F2: 0.34555

Total predictions: 15000 True positives: 796 False positives: 2722 False negatives: 1204 True negatives: 10278

================ NB Scaled Features================

GaussianNB(priors=None)

Accuracy: 0.73900 Precision: 0.22604 Recall: 0.39500 F1: 0.28753 F2: 0.34363

Total predictions: 15000 True positives: 790 False positives: 2705 False negatives: 1210 True negatives: 10295

=============== BernoulliNB ================

GridSearchCV(cv=None, error\_score='raise',

estimator=BernoulliNB(alpha=1.0, binarize=0.0, class\_prior=None, fit\_prior=True),

fit\_params={}, iid=True, n\_jobs=1,

param\_grid={'binarize': [0.0, 0.1, 0.5, 0.05, 0.01, 0.001], 'alpha': [0.05, 0.08, 0.09, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0], 'fit\_prior': [True, False]},

pre\_dispatch='2\*n\_jobs', refit=True, return\_train\_score=True,

scoring=None, verbose=0)

Accuracy: 0.72127 Precision: 0.29358 Recall: 0.77550 F1: 0.42592 F2: 0.58383

Total predictions: 15000 True positives: 1551 False positives: 3732 False negatives: 449 True negatives: 9268

================ DTree ========================

DecisionTreeClassifier(class\_weight=None, criterion='gini', max\_depth=None,

max\_features=None, max\_leaf\_nodes=None,

min\_impurity\_split=1e-07, min\_samples\_leaf=1,

min\_samples\_split=2, min\_weight\_fraction\_leaf=0.0,

presort=False, random\_state=None, splitter='best')

Accuracy: 0.79400 Precision: 0.22335 Recall: 0.22000 F1: 0.22166 F2: 0.22066

Total predictions: 15000 True positives: 440 False positives: 1530 False negatives: 1560 True negatives: 11470

==================== NN ============================

MLPClassifier(activation='relu', alpha=0.0001, batch\_size='auto', beta\_1=0.9,

beta\_2=0.999, early\_stopping=False, epsilon=1e-08,

hidden\_layer\_sizes=(100,), learning\_rate='constant',

learning\_rate\_init=0.001, max\_iter=200, momentum=0.9,

nesterovs\_momentum=True, power\_t=0.5, random\_state=None,

shuffle=True, solver='adam', tol=0.0001, validation\_fraction=0.1,

verbose=False, warm\_start=False)

Accuracy: 0.65347 Precision: 0.12640 Recall: 0.27050 F1: 0.17229 F2: 0.22028

Total predictions: 15000 True positives: 541 False positives: 3739 False negatives: 1459 True negatives: 9261

==================== NN Scalled F =================

MLPClassifier(activation='relu', alpha=0.0001, batch\_size='auto', beta\_1=0.9,

beta\_2=0.999, early\_stopping=False, epsilon=1e-08,

hidden\_layer\_sizes=(100,), learning\_rate='constant',

learning\_rate\_init=0.001, max\_iter=200, momentum=0.9,

nesterovs\_momentum=True, power\_t=0.5, random\_state=None,

shuffle=True, solver='adam', tol=0.0001, validation\_fraction=0.1,

verbose=False, warm\_start=False)

Accuracy: 0.65407 Precision: 0.12171 Recall: 0.25650 F1: 0.16508 F2: 0.20999

Total predictions: 15000 True positives: 513 False positives: 3702 False negatives: 1487 True negatives: 9298

(Udacity) yaser@yaser-Inspiron-7520:~/Udacity/P5/P5\_YasserAlnakhli/scripts$ ./poi\_id\_2.py

/usr/local/lib/python2.7/dist-packages/sklearn/cross\_validation.py:44: DeprecationWarning: This module was deprecated in version 0.18 in favor of the model\_selection module into which all the refactored classes and functions are moved. Also note that the interface of the new CV iterators are different from that of this module. This module will be removed in 0.20.

"This module will be removed in 0.20.", DeprecationWarning)

Dataset Exploration:

Data points: 146

# of POI: 18

# of not POI: 128

/usr/local/lib/python2.7/dist-packages/sklearn/feature\_selection/univariate\_selection.py:113: UserWarning: Features [19 20 21 22 23] are constant.

UserWarning)

/usr/local/lib/python2.7/dist-packages/sklearn/feature\_selection/univariate\_selection.py:114: RuntimeWarning: invalid value encountered in divide

f = msb / msw

16 best features: ['salary', 'total\_stock\_value\_log', 'total\_payments', 'salary\_log', 'bonus', 'bonus\_log', 'total\_stock\_value', 'shared\_receipt\_with\_poi', 'exercised\_stock\_options', 'exercised\_stock\_options\_log', 'total\_payments\_log', 'deferred\_income', 'expenses', 'restricted\_stock', 'long\_term\_incentive', 'loan\_advances']

['poi', 'salary', 'total\_stock\_value\_log', 'total\_payments', 'salary\_log', 'bonus', 'bonus\_log', 'total\_stock\_value', 'shared\_receipt\_with\_poi', 'exercised\_stock\_options', 'exercised\_stock\_options\_log', 'total\_payments\_log', 'deferred\_income', 'expenses', 'restricted\_stock', 'long\_term\_incentive', 'loan\_advances']

Accuracy with LR: 0.790698

recall with LR: 0.400000

precision with LR: 0.250000

the F1 score with LR is: 0.307692

=========================================

Accuracy with NB: 0.860465

recall with NB: 0.400000

precision with NB: 0.400000

the F1 score with NB is: 0.400000

============= look above ============================

Accuracy of scalled features NB: 0.627907

recall of scalled features NB: 1.000000

precision of scalled features NB: 0.238095

the F1 score of scalled features NB: 0.384615

=================BernoulliNB========================

Accuracy of scalled features BernoulliNB: 0.651163

recall of scalled features BernoulliNB: 0.400000

precision of scalled features BernoulliNB: 0.142857

the F1 score of scalled featuresBernoulliNB: 0.210526

=========================================

Accuracy with DTree: 0.813953

recall with DTree: 0.000000

precision with DTree: 0.000000

./poi\_id\_2.py:298: RuntimeWarning: invalid value encountered in double\_scalars

F1 = 2 \* (precision \* recall) / (precision + recall)

the F1 score with DTree is: nan

=========================================

Accuracy of scalled featuresand tunned with DTree: 0.906977

recall of scalled features and tunned with DTree: 0.400000

precision of scalled features and tunned with DTree: 0.666667

the F1 score of scalled features and tunned with DTree is: 0.500000

=========================================

Accuracy with MLPClassifier: 0.790698

recall with MLPClassifier: 0.000000

precision with MLPClassifier: 0.000000

./poi\_id\_2.py:349: RuntimeWarning: invalid value encountered in double\_scalars

F1 = 2 \* (precision \* recall) / (precision + recall)

the F1 score with MLPClassifier is: nan

=========================================

/usr/local/lib/python2.7/dist-packages/sklearn/neural\_network/multilayer\_perceptron.py:563: ConvergenceWarning: Stochastic Optimizer: Maximum iterations reached and the optimization hasn't converged yet.

% (), ConvergenceWarning)

Accuracy with MLPClassifier scaled features: 0.883721

recall with MLPClassifier scaled features: 0.400000

precision with MLPClassifier scaled features: 0.500000

the F1 score with MLPClassifier scaled features is 0.444444

=========================================

Accuracy with tunned MLPClassifier: 0.883721

recall with tunned MLPClassifier: 0.000000

/usr/local/lib/python2.7/dist-packages/sklearn/metrics/classification.py:1113: UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 due to no predicted samples.

'precision', 'predicted', average, warn\_for)

precision with tunned MLPClassifier: 0.000000

./poi\_id\_2.py:393: RuntimeWarning: invalid value encountered in double\_scalars

F1 = 2 \* (precision \* recall) / (precision + recall)

the F1 score with tunned MLPClassifier is: nan

=========================================

================= LR ========================

LogisticRegression(C=1.0, class\_weight=None, dual=False, fit\_intercept=True,

intercept\_scaling=1, max\_iter=100, multi\_class='ovr', n\_jobs=1,

penalty='l2', random\_state=None, solver='liblinear', tol=0.0001,

verbose=0, warm\_start=False)

Accuracy: 0.78420 Precision: 0.18003 Recall: 0.17400 F1: 0.17696 F2: 0.17517

Total predictions: 15000 True positives: 348 False positives: 1585 False negatives: 1652 True negatives: 11415

================== NB =======================

GridSearchCV(cv=None, error\_score='raise', estimator=GaussianNB(priors=None),

fit\_params={}, iid=True, n\_jobs=1,

param\_grid={'priors': [None, [0.1, 0.9], [0.2, 0.8]]},

pre\_dispatch='2\*n\_jobs', refit=True, return\_train\_score=True,

scoring=None, verbose=0)

Accuracy: 0.73827 Precision: 0.22626 Recall: 0.39800 F1: 0.28851 F2: 0.34555

Total predictions: 15000 True positives: 796 False positives: 2722 False negatives: 1204 True negatives: 10278

================ NB Scaled Features================

GaussianNB(priors=None)

Accuracy: 0.73900 Precision: 0.22604 Recall: 0.39500 F1: 0.28753 F2: 0.34363

Total predictions: 15000 True positives: 790 False positives: 2705 False negatives: 1210 True negatives: 10295

=============== BernoulliNB ================

GridSearchCV(cv=None, error\_score='raise',

estimator=BernoulliNB(alpha=1.0, binarize=0.0, class\_prior=None, fit\_prior=True),

fit\_params={}, iid=True, n\_jobs=1,

param\_grid={'binarize': [0.0, 0.1, 0.5, 0.05, 0.01, 0.001], 'alpha': [0.05, 0.08, 0.09, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0], 'fit\_prior': [True, False]},

pre\_dispatch='2\*n\_jobs', refit=True, return\_train\_score=True,

scoring=None, verbose=0)

Accuracy: 0.72127 Precision: 0.29358 Recall: 0.77550 F1: 0.42592 F2: 0.58383

Total predictions: 15000 True positives: 1551 False positives: 3732 False negatives: 449 True negatives: 9268

================ DTree ========================

DecisionTreeClassifier(class\_weight=None, criterion='gini', max\_depth=None,

max\_features=None, max\_leaf\_nodes=None,

min\_impurity\_split=1e-07, min\_samples\_leaf=1,

min\_samples\_split=2, min\_weight\_fraction\_leaf=0.0,

presort=False, random\_state=None, splitter='best')

Accuracy: 0.79560 Precision: 0.22554 Recall: 0.21900 F1: 0.22222 F2: 0.22028

Total predictions: 15000 True positives: 438 False positives: 1504 False negatives: 1562 True negatives: 11496

==================== NN ============================

MLPClassifier(activation='relu', alpha=0.0001, batch\_size='auto', beta\_1=0.9,

beta\_2=0.999, early\_stopping=False, epsilon=1e-08,

hidden\_layer\_sizes=(100,), learning\_rate='constant',

learning\_rate\_init=0.001, max\_iter=200, momentum=0.9,

nesterovs\_momentum=True, power\_t=0.5, random\_state=None,

shuffle=True, solver='adam', tol=0.0001, validation\_fraction=0.1,

verbose=False, warm\_start=False)

Accuracy: 0.65607 Precision: 0.12562 Recall: 0.26500 F1: 0.17045 F2: 0.21688

Total predictions: 15000 True positives: 530 False positives: 3689 False negatives: 1470 True negatives: 9311

==================== NN Scalled F =================

MLPClassifier(activation='relu', alpha=0.0001, batch\_size='auto', beta\_1=0.9,

beta\_2=0.999, early\_stopping=False, epsilon=1e-08,

hidden\_layer\_sizes=(100,), learning\_rate='constant',

learning\_rate\_init=0.001, max\_iter=200, momentum=0.9,

nesterovs\_momentum=True, power\_t=0.5, random\_state=None,

shuffle=True, solver='adam', tol=0.0001, validation\_fraction=0.1,

verbose=False, warm\_start=False)

Accuracy: 0.64693 Precision: 0.12374 Recall: 0.27100 F1: 0.16991 F2: 0.21890

Total predictions: 15000 True positives: 542 False positives: 3838 False negatives: 1458 True negatives: 9162

=========================================

(Udacity) yaser@yaser-Inspiron-7520:~/Udacity/P5/P5\_YasserAlnakhli/scripts$ ./poi\_id\_2.py

/usr/local/lib/python2.7/dist-packages/sklearn/cross\_validation.py:44: DeprecationWarning: This module was deprecated in version 0.18 in favor of the model\_selection module into which all the refactored classes and functions are moved. Also note that the interface of the new CV iterators are different from that of this module. This module will be removed in 0.20.

"This module will be removed in 0.20.", DeprecationWarning)

Dataset Exploration:

Data points: 146

# of POI: 18

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/usr/local/lib/python2.7/dist-packages/sklearn/feature\_selection/univariate\_selection.py:113: UserWarning: Features [19 20 21 22 23] are constant.

UserWarning)

/usr/local/lib/python2.7/dist-packages/sklearn/feature\_selection/univariate\_selection.py:114: RuntimeWarning: invalid value encountered in divide

f = msb / msw

6 best features: ['total\_stock\_value\_log', 'salary\_log', 'bonus\_log', 'exercised\_stock\_options', 'exercised\_stock\_options\_log', 'total\_payments\_log']

['poi', 'total\_stock\_value\_log', 'salary\_log', 'bonus\_log', 'exercised\_stock\_options', 'exercised\_stock\_options\_log', 'total\_payments\_log']

Accuracy with LR: 0.903226

recall with LR: 0.000000

/usr/local/lib/python2.7/dist-packages/sklearn/metrics/classification.py:1113: UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 due to no predicted samples.

'precision', 'predicted', average, warn\_for)

precision with LR: 0.000000

./poi\_id\_2.py:211: RuntimeWarning: invalid value encountered in double\_scalars

F1 = 2 \* (precision \* recall) / (precision + recall)

the F1 score with LR is: nan

=========================================

Accuracy with NB: 0.838710

recall with NB: 0.666667

precision with NB: 0.333333

the F1 score with NB is: 0.444444

============= look above ============================

Accuracy of scalled features NB: 0.838710

recall of scalled features NB: 0.666667

precision of scalled features NB: 0.333333

the F1 score of scalled features NB: 0.444444

=================BernoulliNB========================

Accuracy of scalled features BernoulliNB: 0.967742

recall of scalled features BernoulliNB: 0.666667

precision of scalled features BernoulliNB: 1.000000

the F1 score of scalled featuresBernoulliNB: 0.800000

=========================================

Accuracy with DTree: 0.838710

recall with DTree: 0.666667

precision with DTree: 0.333333

the F1 score with DTree is: 0.444444

=========================================

Accuracy of scalled featuresand tunned with DTree: 0.903226

recall of scalled features and tunned with DTree: 0.666667

precision of scalled features and tunned with DTree: 0.500000

the F1 score of scalled features and tunned with DTree is: 0.571429

=========================================

Accuracy with MLPClassifier: 0.903226

recall with MLPClassifier: 0.000000

precision with MLPClassifier: 0.000000

./poi\_id\_2.py:387: RuntimeWarning: invalid value encountered in double\_scalars

F1 = 2 \* (precision \* recall) / (precision + recall)

the F1 score with MLPClassifier is: nan

=========================================

/usr/local/lib/python2.7/dist-packages/sklearn/neural\_network/multilayer\_perceptron.py:563: ConvergenceWarning: Stochastic Optimizer: Maximum iterations reached and the optimization hasn't converged yet.

% (), ConvergenceWarning)

Accuracy with MLPClassifier scaled features: 0.935484

recall with MLPClassifier scaled features: 0.333333

precision with MLPClassifier scaled features: 1.000000

the F1 score with MLPClassifier scaled features is 0.500000

=========================================

Accuracy with tunned MLPClassifier: 0.096774

recall with tunned MLPClassifier: 1.000000

precision with tunned MLPClassifier: 0.096774

the F1 score with tunned MLPClassifier is: 0.176471

=========================================

================= LR ========================

LogisticRegression(C=1.0, class\_weight=None, dual=False, fit\_intercept=True,

intercept\_scaling=1, max\_iter=100, multi\_class='ovr', n\_jobs=1,

penalty='l2', random\_state=None, solver='liblinear', tol=0.0001,

verbose=0, warm\_start=False)

Accuracy: 0.78420 Precision: 0.18003 Recall: 0.17400 F1: 0.17696 F2: 0.17517

Total predictions: 15000 True positives: 348 False positives: 1585 False negatives: 1652 True negatives: 11415

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GridSearchCV(cv=None, error\_score='raise', estimator=GaussianNB(priors=None),

fit\_params={}, iid=True, n\_jobs=1,

param\_grid={'priors': [None, [0.1, 0.9], [0.2, 0.8]]},

pre\_dispatch='2\*n\_jobs', refit=True, return\_train\_score=True,

scoring=None, verbose=0)

Accuracy: 0.73827 Precision: 0.22626 Recall: 0.39800 F1: 0.28851 F2: 0.34555

Total predictions: 15000 True positives: 796 False positives: 2722 False negatives: 1204 True negatives: 10278

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Total predictions: 15000 True positives: 790 False positives: 2705 False negatives: 1210 True negatives: 10295

=============== BernoulliNB ================

GridSearchCV(cv=None, error\_score='raise',

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fit\_params={}, iid=True, n\_jobs=1,

param\_grid={'binarize': [0.0, 0.1, 0.5, 0.05, 0.01, 0.001], 'alpha': [0.05, 0.08, 0.09, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0], 'fit\_prior': [True, False]},

pre\_dispatch='2\*n\_jobs', refit=True, return\_train\_score=True,

scoring=None, verbose=0)

Accuracy: 0.72127 Precision: 0.29358 Recall: 0.77550 F1: 0.42592 F2: 0.58383

Total predictions: 15000 True positives: 1551 False positives: 3732 False negatives: 449 True negatives: 9268

================ DTree ========================

DecisionTreeClassifier(class\_weight=None, criterion='gini', max\_depth=None,

max\_features=None, max\_leaf\_nodes=None,

min\_impurity\_split=1e-07, min\_samples\_leaf=1,

min\_samples\_split=2, min\_weight\_fraction\_leaf=0.0,

presort=False, random\_state=None, splitter='best')

Accuracy: 0.79753 Precision: 0.23037 Recall: 0.22150 F1: 0.22585 F2: 0.22322

Total predictions: 15000 True positives: 443 False positives: 1480 False negatives: 1557 True negatives: 11520

==================== NN ============================

MLPClassifier(activation='relu', alpha=0.0001, batch\_size='auto', beta\_1=0.9,

beta\_2=0.999, early\_stopping=False, epsilon=1e-08,

hidden\_layer\_sizes=(100,), learning\_rate='constant',

learning\_rate\_init=0.001, max\_iter=200, momentum=0.9,

nesterovs\_momentum=True, power\_t=0.5, random\_state=None,

shuffle=True, solver='adam', tol=0.0001, validation\_fraction=0.1,

verbose=False, warm\_start=False)

Accuracy: 0.64993 Precision: 0.11563 Recall: 0.24450 F1: 0.15701 F2: 0.19993

Total predictions: 15000 True positives: 489 False positives: 3740 False negatives: 1511 True negatives: 9260

==================== NN Scalled F =================

MLPClassifier(activation='relu', alpha=0.0001, batch\_size='auto', beta\_1=0.9,

beta\_2=0.999, early\_stopping=False, epsilon=1e-08,

hidden\_layer\_sizes=(100,), learning\_rate='constant',

learning\_rate\_init=0.001, max\_iter=200, momentum=0.9,

nesterovs\_momentum=True, power\_t=0.5, random\_state=None,

shuffle=True, solver='adam', tol=0.0001, validation\_fraction=0.1,

verbose=False, warm\_start=False)

Accuracy: 0.64527 Precision: 0.12304 Recall: 0.27100 F1: 0.16924 F2: 0.21846

Total predictions: 15000 True positives: 542 False positives: 3863 False negatives: 1458 True negatives: 9137

(Udacity) yaser@yaser-Inspiron-7520:~/Udacity/P5/P5\_YasserAlnakhli/scripts$