##DAND - Udacity Course
Machine Learning Final Project by Teresa Aysan
March 4, 2018

TEXT FILE LISTING MY REFERENCES

# All of the following references were used while doing the Machine Learning Project.

I have cited the origins of any parts of the submission that were taken from that origin. The numbers at the start of the reference cross-reference back to the superscript number in my code and/or in my "Documentation of My Work".

1 https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475461/lessons/3174288624239847/concepts/31726388830923 and https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2948958577/concepts/30368385820923

2https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2948958577/concepts/30368385820923

3https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2291728537/concepts/30100186330923 - Size of Training Set. More data is always better.

4https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2254358555/concepts/24196685390923

https://stackoverflow.com/questions/5904969/how-to-print-a-dictionarys-key

https://stackoverflow.com/questions/5844672/delete-an-item-from-a-dictionary

 $\verb|https://stackoverflow.com/questions/30345574/scatter-a-2d-numpy-array-in-matplotlib| \\$ 

5https://stackoverflow.com/questions/27516849/how-to-convert-list-of-numpy-arrays-into-single-numpy-array

https://stackoverflow.com/questions/7118276/how-to-remove-specific-element-in-an-array-using-python

6https://stackoverflow.com/questions/10996140/how-to-remove-specific-elements-in-a-numpy-array

https://docs.scipy.org/doc/numpy1.13.0/reference/generated/numpy.concatenate.html

https://stackoverflow.com/questions/13634349/plot-2-dimensional-numpy-array-using-specific-columns

https://blogs.sas.com/content/iml/2016/07/18/color-markers-third-variable-sas.html

https://stackoverflow.com/questions/31685078/change-color-of-2d-plot-line-depending-on-3rd-value

7https://stackoverflow.com/questions/26754626/how-to-make-2d-scatter-plot-in-matlab-with-colors-depending-on-values

https://www.mathworks.com/matlabcentral/answers/354423-how-to-access-gscatter-property-and-update-data?requestedDomain=www.mathworks.com

https://stackoverflow.com/questions/35313489/python-matplotlib-legend-based-on-a-conditional-variable

https://www.mathworks.com/help/matlab/ref/scatter.html

8https://stackoverflow.com/questions/8486294/how-to-add-an-extra-column-to-an-numpy-array

9https://stackoverflow.com/questions/45709743/how-to-replace-a-value-in-array-in-numpy-python

10https://stackoverflow.com/questions/4700614/how-to-put-the-legend-out-of-the-plot

11https://stackoverflow.com/questions/39500265/manually-add-legend-items-python-matplotlib

https://stackoverflow.com/questions/16826711/is-it-possible-to-add-a-string-as-a-legend-item-in-matplotlib

https://stackoverflow.com/questions/19125722/adding-a-legend-to-pyplot-in-matplotlib-in-the-most-simple-manner-possible

https://docs.scipy.org/doc/numpy1.13.0/reference/generated/numpy.chararray.html

https://www.google.ca/search?dcr=0&ei=uAWWrGNE4aJ0gLOgbnwCg&q=matplotlib+scatter&oq=matplotlib&gs\_l=psyab.1.3.0i131i67k112j0i67k112j0i131i67k1j0i67k115.1253682.1257529.0.126412 7.10.4.0.6.6.0.362.651.0j2j0j1.3.0....0...1c.1.64.psyab..1.9.703...0j0i131k1.0.03c4XKiuU-o

https://matplotlib.org/devdocs/api/\_as\_gen/matplotlib.pyplot.scatter.html

https://matplotlib.org/devdocs/gallery/lines\_bars\_and\_markers/scatter\_masked.html#sphx-glr-gallery-lines-bars-and-markers-scatter-masked-py

https://matplotlib.org/devdocs/\_downloads/scatter\_masked.py

https://matplotlib.org/devdocs/gallery/lines\_bars\_and\_markers/scatter\_symbol.html#sphx-glr-gallery-lines-bars-and-markers-scatter-symbol-py

```
http://anh.cs.luc.edu/python/hands-on/3.1/handsonHtml/ifstatements.html
https://www.mathworks.com/help/matlab/ref/scatter.html
https://www.mathworks.com/help/matlab/ref/scatter.html#btrli6o-1_1
https://www.mathworks.com/help/matlab/ref/scatter.html#btrli6o-1
https://stackoverflow.com/questions/17411940/matplotlib-scatter-plot-
legend
12https://stackoverflow.com/questions/7561017/get-the-column-names-of-a-
python-numpy-ndarray
13https://stackoverflow.com/questions/8598163/split-title-of-a-figure-in-
matplotlib
https://docs.scipy.org/doc/numpy-1.13.0/reference/routines.char.html
14https://docs.scipy.org/doc/numpy-
1.13.0/reference/generated/numpy.zeros.html#numpy.zeros
https://docs.scipy.org/doc/numpy-
1.13.0/reference/generated/numpy.divide.html
https://stackoverflow.com/questions/3877209/how-to-convert-an-array-of-
strings-to-an-array-of-floats-in-numpy
https://discussions.udacity.com/t/outlier-removal-with-a-classification-
algorithm/16573/18 Convert to pandas and boxplot
https://stackoverflow.com/questions/31695360/convert-multidimensional-
array-string-to-float-in-python
https://stackoverflow.com/questions/27317517/make-division-by-zero-equal-
to-zero
https://stackoverflow.com/questions/176918/finding-the-index-of-an-item-
given-a-list-containing-it-in-python
15https://stackoverflow.com/questions/27350048/python-return-index-of-an-
element-of-an-array-given-specific-conditions
16https://stackoverflow.com/questions/18079029/index-of-element-in-numpy-
arrav
17https://stackoverflow.com/questions/3877491/deleting-rows-in-numpy-
array
https://stackoverflow.com/questions/28124971/removing-rows-from-a-multi-
dimensional-numpy-array
18https://stackoverflow.com/questions/43152529/python-matplotlib-adding-
regression-line-to-a-plot
```

https://stackoverflow.com/questions/37234163/how-to-add-a-line-of-best-fit-to-scatter-plot

https://stackoverflow.com/questions/12981696/how-to-draw-line-inside-a-scatter-plot Shows dashed red line

19https://stackoverflow.com/questions/35099130/change-spacing-of-dashes-in-dashed-line-in-matplotlib

https://matplotlib.org/1.3.1/examples/pylab\_examples/line\_styles.html

https://matplotlib.org/devdocs/gallery/lines\_bars\_and\_markers/line\_demo\_d ash\_control.html

http://matplotlib.org/api/pyplot\_api.html#matplotlib.pyplot.plot

20https://stackoverflow.com/questions/20335290/matplotlib-plot-set-x-ticks Use of ax and how to set ticks

https://stackoverflow.com/questions/12608788/changing-the-tick-frequency-on-x-or-y-axis-in-matplotlib

21https://stackoverflow.com/questions/4455076/how-to-access-the-ith-column-of-a-numpy-multidimensional-array

https://docs.python.org/2/library/time.html

https://docs.python.org/2/library/functions.html#round

https://stackoverflow.com/questions/997797/what-does-s-mean-in-python

https://stackoverflow.com/questions/6839542/how-to-use-more-than-one-condition-in-python-for-loop

https://stackoverflow.com/questions/19122345/to-convert-string-to-variable-name

https://stackoverflow.com/questions/8028708/dynamically-set-local-variable

https://stackoverflow.com/questions/11354214/creating-dynamically-named-variables-from-user-input

https://stackoverflow.com/questions/5036700/how-can-you-dynamically-create-variables-via-a-while-loop

https://stackoverflow.com/questions/1373164/how-do-i-create-a-variable-number-of-variables

https://stackoverflow.com/questions/402504/how-to-determine-a-python-variables-type

```
https://stackoverflow.com/questions/30937667/naivebayes-classifier-
handling-different-data-types-in-python
http://scikit-
learn.org/stable/modules/generated/sklearn.feature_extraction.DictVectori
zer.html
https://stackoverflow.com/questions/6774980/is-there-a-way-to-add-
multiple-conditions-in-a-for-loop
https://stackoverflow.com/questions/4323946/loop-with-conditions-in-
python
https://stackoverflow.com/questions/18648626/for-loop-with-two-variables
https://stackoverflow.com/questions/2146419/how-to-do-while-loops-with-
multiple-conditions
https://stackoverflow.com/questions/3052793/python-output-from-functions
22 Code from Final Project given by Udacity in Tools\feature_format.py
23https://stackoverflow.com/questions/1024847/add-new-keys-to-a-
dictionary
https://stackoverflow.com/questions/12453799/how-to-create-a-table-using-
python
24https://stackoverflow.com/questions/38622975/typeerror-object-of-type-
file-has-no-len
https://stackoverflow.com/questions/354883/how-do-you-return-multiple-
values-in-python
25https://stackoverflow.com/questions/419163/what-does-if-name-main-do
26https://stackoverflow.com/questions/40801789/using-return-value-inside-
another-function
27https://stackoverflow.com/questions/455612/limiting-floats-to-two-
decimal-points
28From Udacity Feature_Format.py imported featureFormat() and
targetFeatureSplit()
29Based on Udacity Regression lesson on how to code and plot regressions.
https://machinelearningmastery.com/rescaling-data-for-machine-learning-
in-python-with-scikit-learn/
30https://stackoverflow.com/questions/20073639/python-syntaxerror-
```

invalid-syntax-end

https://github.com/spyder-ide/spyder/issues/64

```
https://qithub.com/JulianEberius/SublimeRope/issues/82
https://mail.google.com/mail/u/0/#inbox
https://github.com/SublimeLinter/SublimeLinter-for-
ST2/issues/561#issuecomment-31094858
https://github.com/SublimeLinter/SublimeLinter-for-ST2/issues/561
https://www.codecademy.com/en/forum_questions/514c4578172ea3daa90018f4
https://en.wikibooks.org/wiki/Python_Programming/Print_version
https://www.cse.msu.edu/~cse231/Online/debugging.pdf
https://stackoverflow.com/tags/spyder/hot?filter=all
https://stackoverflow.com/questions/5951135/how-to-save-a-list-as-numpy-
array-in-python
https://stackoverflow.com/questions/23668509/dictionary-keys-and-values-
to-separate-numpy-arrays
https://stackoverflow.com/questions/24168569/how-to-add-names-to-a-numpy-
array-without-changing-its-dimension
https://stackoverflow.com/questions/26850355/converting-list-to-numpy-
array
https://stackoverflow.com/questions/24168569/how-to-add-names-to-a-numpy-
array-without-changing-its-dimension
https://github.com/numpy/numpy/issues/5134
https://stackoverflow.com/questions/3405715/elegant-way-to-remove-fields-
from-nested-dictionaries
https://stackoverflow.com/questions/5064822/how-to-add-items-into-a-
numpy-array
https://stackoverflow.com/questions/23668509/dictionary-keys-and-values-
to-separate-numpy-arrays
https://stackoverflow.com/questions/5951135/how-to-save-a-list-as-numpy-
array-in-python
https://stackoverflow.com/questions/21016684/delete-rows-from-numpy-
array-depending-on-a-condition-on-a-single-cell
https://docs.scipy.org/doc/numpy-
1.13.0/reference/generated/numpy.delete.html
https://stackoverflow.com/questions/3877491/deleting-rows-in-numpy-array
```

```
https://stackoverflow.com/questions/25380255/how-do-i-remove-rows-from-a-
numpy-array-based-on-multiple-conditions
https://stackoverflow.com/questions/19561857/remove-rows-in-3d-numpy-
array
https://stackoverflow.com/questions/28124971/removing-rows-from-a-multi-
dimensional-numpy-array
https://stackoverflow.com/questions/21016684/delete-rows-from-numpy-
array-depending-on-a-condition-on-a-single-cell
https://stackoverflow.com/questions/27532503/remove-nan-row-from-x-array-
and-also-the-corresponding-row-in-y
https://stackoverflow.com/questions/30340628/delete-rows-at-select-
indexes-from-a-numpy-array
https://www.dataquest.io/blog/numpy-tutorial-python/
https://stackoverflow.com/questions/971678/iterating-through-a-
multidimensional-array-in-python
https://discussions.udacity.com/t/final-project-doubts/248874/13
31http://scikit-
learn.org/stable/modules/generated/sklearn.cross validation.StratifiedShu
ffleSplit.html
32Final Project: tester.py
http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.59.2085&rep=rep1
&type=pdf
https://stats.stackexchange.com/questions/18815/increasing-number-of-
features-results-in-accuracy-drop-but-prec-recall-increase
https://machinelearningmastery.com/better-naive-bayes/
http://scikit-
learn.org/stable/auto_examples/model_selection/plot_precision_recall.html
http://scikit-
learn.org/stable/auto_examples/model_selection/plot_precision_recall.html
http://scikit-learn.org/stable/modules/naive_bayes.html#gaussian-naive-
bayes
http://scikit-
learn.org/stable/modules/generated/sklearn.naive_bayes.GaussianNB.html#sk
learn.naive_bayes.GaussianNB
```

http://scikit-

learn.org/stable/modules/generated/sklearn.naive\_bayes.GaussianNB.html#sk
learn.naive\_bayes.GaussianNB.get\_params

https://machinelearningmastery.com/better-naive-bayes/

http://rushdishams.blogspot.ca/2011/08/micro-and-macro-average-ofprecision.html

https://stackoverflow.com/questions/423379/using-global-variables-in-a-function-other-than-the-one-that-created-them

https://docs.python.org/3/faq/programming.html

 $\label{local-and-global-variables-in-python} https://docs.python.org/3/faq/programming.html \# what-are-the-rules-for-local-and-global-variables-in-python$ 

https://www.google.ca/search?dcr=0&ei=4AJJWuLzGazMjwT7\_4mYBQ&q=python+random.random+example&oq=python+random.ran&gs\_l=psy-ab.1.3.0110.101591860.101597410.0.101601106.23.18.0.3.3.0.560.2145.0j2j3j2j0j1.8.0...0...1c.1.64.psy-ab..12.11.2171...0i10k1j0i131k1j0i67k1j0i10i67k1.0.RbJlaOHioOq

33makeFinanceData: Similar to code in Lesson 14, quiz 8: https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2960698751/concepts/29872685780923

https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2960698751/concepts/34257790760923

cross validation for parameter tuning - automatically selecting the best parameters:

https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2960698751/concepts/30561085470923

## random state:

https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2960698751/concepts/30383385630923

evaluation metrics and how to improve them:

https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2945338635/concepts/30294986060923

SVC very slow: https://stackoverflow.com/questions/40077432/scikit-learn-svm-svc-is-extremely-slow

34https://www.google.ca/search?dcr=0&ei=ufZQWrSJEOaP0gKdyIHYAQ&q=what+does+regression+mean+in+statistics&oq=what+does+regression+mean+in+statistics&gs\_l=psy-ab.12...0.0.0.6725.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.1c..64.psy-ab..0.0.0.cCN20jYIRYI

35https://www.google.ca/search?dcr=0&ei=ufZQWrSJEOaP0gKdyIHYAQ&q=what+does+r-squared+score+mean+in+statistics&oq=what+does+r-squared+score+mean+in+statistics&gs\_l=psy-

```
ab.12...488549.488549.0.491068.1.1.0.0.0.0.558.558.5-
1.1.0....0...1c.1.64.psy-ab...0.0.0....0.A7F7BviJzDo
https://stackoverflow.com/questions/176918/finding-the-index-of-an-item-
given-a-list-containing-it-in-python
https://stackoverflow.com/questions/5735841/typeerror-list-object-is-not-
callable-while-trying-to-access-a-list
https://stackoverflow.com/questions/31087111/typeerror-list-object-is-
not-callable-in-python/31087151
https://stackoverflow.com/questions/176918/finding-the-index-of-an-item-
given-a-list-containing-it-in-python
https://stackoverflow.com/questions/10645444/unbound-method-with-
instance-as-first-argument-got-string-but-requires-something
https://www.google.ca/search?dcr=0&ei=PWJfWtfxI9HejwPforBw&q=isinstance+p
ython+example&og=isinstance&gs l=psy-
ab.1.2.016j0i10k1j013.171026203.171029376.0.171033069.20.14.0.0.0.0.508.2
404.0j5j3j1j0j1.11.0....0...1c.1.64.psy-
ab..9.10.2398.0..0i67k1j0i131i67k1j0i131k1j0i10i67k1.135.vHlgkIM5e-A
https://discussions.udacity.com/t/difference-in-precision-and-recall-in-
final-project/250667
37http://benalexkeen.com/feature-scaling-with-scikit-learn/
36https://stackoverflow.com/questions/35595766/matplotlib-line-magic-
causes-syntaxerror-in-python-script
http://scikit-learn.org/stable/modules/preprocessing.html
https://community.modeanalytics.com/python/tutorial/pandas-
dataframe/#selecting-columns-in-a-dataframe
https://github.com/pandas-
dev/pandas/blob/v0.22.0/pandas/core/frame.py#L1906-L1909
https://pandas.pydata.org/pandas-
docs/stable/generated/pandas.DataFrame.transpose.html
https://stackoverflow.com/questions/31658183/how-to-switch-columns-rows-
in-a-pandas-dataframe
https://stackoverflow.com/questions/12555323/adding-new-column-to-
existing-dataframe-in-python-pandas
https://stackoverflow.com/questions/14940743/selecting-excluding-sets-of-
```

https://chrisalbon.com/python/data\_wrangling/pandas\_dropping\_column\_and\_r

columns-in-pandas

ows/

```
https://stackoverflow.com/questions/22392786/excluding-rows-from-a-
pandas-dataframe-based-on-column-value-and-not-index-value
https://stackoverflow.com/questions/13851535/how-to-delete-rows-from-a-
pandas-dataframe-based-on-a-conditional-expression
https://stackoverflow.com/questions/13295735/how-can-i-replace-all-the-
nan-values-with-zeros-in-a-column-of-a-pandas-datafra
https://pandas.pydata.org/pandas-
docs/stable/generated/pandas.DataFrame.html
https://stackoverflow.com/questions/22470690/get-list-of-pandas-
dataframe-columns-based-on-data-type
https://stackoverflow.com/questions/1841565/valueerror-invalid-literal-
for-int-with-base-10
https://pandas.pydata.org/pandas-docs/stable/merging.html
https://www.google.ca/url?sa=t&rct=j&g=&esrc=s&source=web&cd=1&cad=rja&ua
ct=8&ved=2ahUKEwjtzPf90_jYAhUN1WMKHarcBd4QFjAAeqQIARAB&url=https%3A%2F%2F
stackoverflow.com%2Fquestions%2F11346283%2Frenaming-columns-in-
pandas&usg=AOvVaw1bFLs5KQ4Gk7krL7GN9clQ
https://pandas-docs.github.io/pandas-docs-travis/dsintro.html
https://stackoverflow.com/questions/19712264/what-is-record-array-in-
pandas
https://stackoverflow.com/questions/26716616/convert-a-pandas-dataframe-
to-a-dictionary
https://docs.scipy.org/doc/numpy/reference/generated/numpy.recarray.html
https://stackoverflow.com/questions/46837472/converting-pandas-dataframe-
to-structured-arrays
http://pandas.pydata.org/pandas-
docs/version/0.18/generated/pandas.DataFrame.html
https://pandas.pydata.org/pandas-
docs/stable/generated/pandas.DataFrame.as_matrix.html
https://stackoverflow.com/questions/13187778/convert-pandas-dataframe-to-
numpy-array-preserving-index
https://stackoverflow.com/questions/11346283/renaming-columns-in-pandas
https://stackoverflow.com/questions/39050539/adding-multiple-columns-to-
```

http://pandas.pydata.org/pandas-docs/stable/indexing.html#basics

pandas-simultaneously

https://stackoverflow.com/questions/12555323/adding-new-column-toexisting-dataframe-in-python-pandas http://scikit-learn.org/stable/modules/ensemble.html http://scikitlearn.org/stable/modules/generated/sklearn.model\_selection.GridSearchCV.h t m 1 http://scikit-learn.org/stable/auto\_examples/plot\_compare\_reduction.html https://discussions.udacity.com/t/dont-know-how-to-validate/201521/4 http://scikit-learn.org/stable/modules/pipeline.html 38https://discussions.udacity.com/t/error-using-pipeline/171750/4 https://discussions.udacity.com/t/project-fear-strugging-with-machinelearning-project/198529/47 https://discussions.udacity.com/t/dont-know-how-to-validate/201521/19 https://discussions.udacity.com/t/error-using-pipeline/171750/10 http://scikitlearn.org/stable/modules/generated/sklearn.feature selection.SelectKBest. html http://scikitlearn.org/stable/auto\_examples/plot\_compare\_reduction.html#sphx-glr-autoexamples-plot-compare-reduction-py http://scikitlearn.org/stable/modules/generated/sklearn.decomposition.PCA.html http://scikit-learn.org/stable/modules/grid\_search.html https://stackoverflow.com/questions/39839112/the-easiest-way-for-gettingfeature-names-after-running-selectkbest-in-scikit-le 39: https://stackoverflow.com/questions/39839112/the-easiest-way-forgetting-feature-names-after-running-selectkbest-in-scikit-le https://stackoverflow.com/questions/46902367/numpy-array-typeerror-onlyinteger-scalar-arrays-can-be-converted-to-a-scalar-i 40https://discussions.udacity.com/t/selectpercentile-how-to-fill-theparameters/174780/15

https://stackoverflow.com/questions/3776275/how-to-add-key-value-pair-to-

dictionary/28380174

https://stackoverflow.com/questions/11371691/adding-a-new-key-to-a-nested-dictionary-in-python

https://www.sitepoint.com/community/t/adding-a-new-key-to-a-nested-dictionary-in-python/247766/2

https://mail.python.org/pipermail/tutor/2010-May/076238.html

http://www.pythonforbeginners.com/dictionary/dictionary-manipulation-in-python

41https://www.quora.com/In-Python-can-we-add-a-dictionary-inside-a-dictionary-If-yes-how-can-we-access-the-inner-dictionary-using-the-key-in-the-primary-dictionary

http://scikit-

learn.org/stable/modules/generated/sklearn.naive\_bayes.GaussianNB.html

http://scikit-

learn.org/stable/modules/generated/sklearn.naive\_bayes.GaussianNB.html

http://scikit-

learn.org/stable/auto\_examples/calibration/plot\_calibration.html#sphxglr-auto-examples-calibration-plot-calibration-py

http://scikit-

learn.org/stable/auto\_examples/hetero\_feature\_union.html#sphx-glr-autoexamples-hetero-feature-union-py

https://github.com/scikit-learn/scikit-learn/blob/a24c8b46/sklearn/base.py#L213

http://scikit-

learn.org/stable/modules/generated/sklearn.naive\_bayes.GaussianNB.html#sk
learn.naive\_bayes.GaussianNB.set\_params

http://scikit-

learn.org/stable/modules/generated/sklearn.base.BaseEstimator.html

https://discussions.udacity.com/t/gaussiannb-parameters/22982

https://discussions.udacity.com/t/implementation-the-optimal-selection-of-the-k-value-within-the-gridcv-process/224205/14

https://discussions.udacity.com/t/using-gaussiannb-when-gridsearchcv/198156

42https://stackoverflow.com/questions/22903267/what-is-tuning-in-machine-learning

43https://link.springer.com/referenceworkentry/10.1007%2F978-1-4419-9863-7 233

44https://stats.stackexchange.com/questions/19048/what-is-the-difference-between-test-set-and-validation-set

45https://rapidminer.com/resource/correct-model-validation/ This is a very good white paper... but it is also a marketing tool for rapidminder 46 https://machinelearningmastery.com/overfitting-and-underfitting-with-machine-learning-algorithms/ Very good. Simple to read re overfitting. https://www.casact.org/pubs/monographs/papers/06-Kunce-Chatterjee.pdf

47http://scikit-

learn.org/stable/modules/generated/sklearn.metrics.precision\_score.html

48https://www.analyticsvidhya.com/blog/2016/03/complete-guide-parameter-tuning-xgboost-with-codes-python/

49https://gallery.azure.ai/Experiment/Evaluating-and-Parameter-Tuning-a-Decision-Tree-Model-1

50http://scikit-learn.org/stable/modules/tree.html

51http://scikit-

learn.org/stable/modules/generated/sklearn.tree.DecisionTreeClassifier.ht
ml

52Course Lesson 4 Decision Trees, 13. Data Impurity and Entropy https://classroom.udacity.com/nanodegrees/nd002/parts/0021345409/modules/317428862475460/lessons/2258728540/concepts/2448828554092353http://scikit-

learn.org/stable/auto\_examples/model\_selection/plot\_precision\_recall.html