

November 21st, 2016
Due Date: December 2nd, 2016

Assignment 3

Validation techniques and Applications of Machine Learning in PS

1. Why are validation techniques important in Machine Learning?
2. Describe the basic principle behind Cross-Validation
3. Please describe the difference between False Positives, True Positives, False Negatives and True Negatives.
4. Given the following table with true labels and the output of a classifier C, please plot the ROC plot of this particular classifier. Given the ROC, please (in a qualitative way) draw your conclusions regarding this classifier.

Label	Classifier Output
1	0.9
1	0.8
1	0.7
1	0.6
1	0.5
0	0.4
0	0.49
0	0.2
0	0.1

5. Find at least three constraints on applying Machine Learning in either Astronomy, Geophysics or Planetary Sciences.
 - a. Tip: You can use constraints given in class, or you can find constraints that are unique to other datasets.