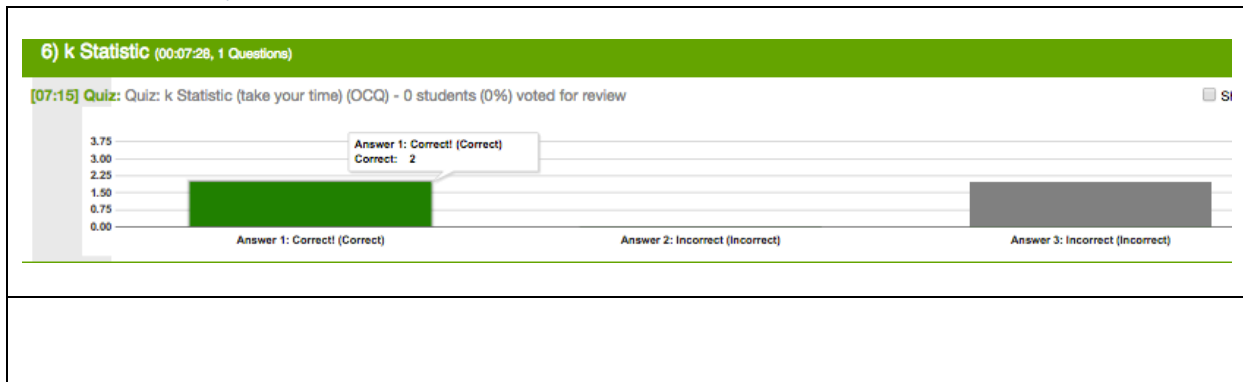


Feedback Quiz Lecture 04: k statistic



Quiz 1: k statistic

		Predicted		
		Red	Green	Blue
Actual	Red	37	1	2
	Green	3	16	11
	Blue	1	12	17
	Total	41	29	30

Our classifier predicts Red 41 times, Green 29 times and Blue 30 times. The **actual numbers** for the sample are: 40 Red, 30 Green and 30 Blue.

Overall, our classifier is right 70% of the time.

Suppose these predictions had been random guesses. Our classifier have been randomly right: $0.4 \times 41 + 0.3 \times 29 + 0.3 \times 30 = 34.1$ (random guess)

So the actual success rate of 70% represents an improvement of 35.9% on random guessing.

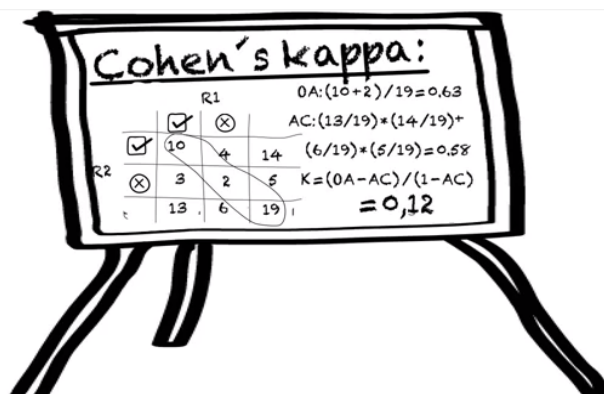
What is the k statistic for our classifier?

- 0.54
- 0.60
- 0.70

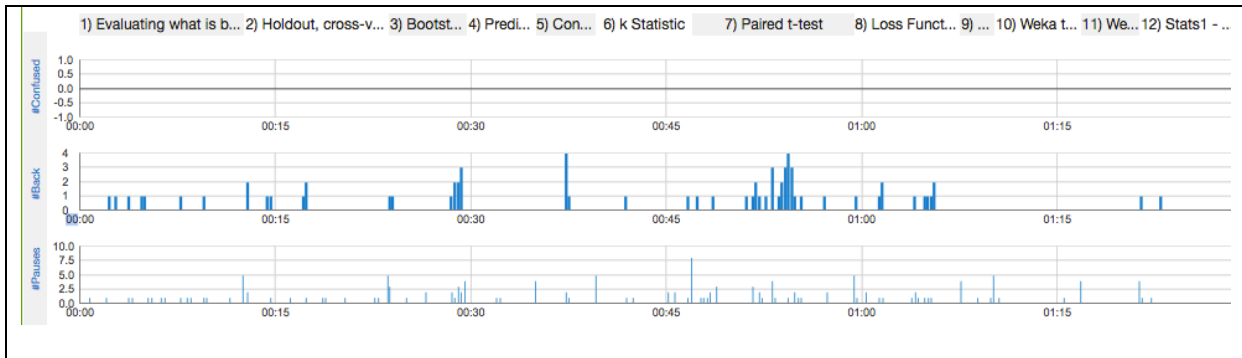
Lecture 8 ML in Practice (1) 4

http://stp.lingfil.uu.se/~santanim/ml/2015/lectures/Lecture08_kStatistic_QuizSolution.pdf

k statistic is a calculation that removes the agreement **by chance** (watch this video, if this concept is still unclear: https://www.youtube.com/watch?v=fOR_8gkU3UE)



Paired t-test



For details about bootstrap, read pp. 155-156 (ch 5): it is a way to do sampling with replacement (so far we talked about not having repeated instances in the training set and the test set. With bootstrap, duplicates are included...

For details about the calculations of paired t-test, read the weka book (3rd ed) pages 157-159 (Ch 5). Typically, we want to compare the accuracy of two classifiers for statistical significance. Both classifiers are run on the same data set. Are these differences statistically significant (ie are the differences due to chance or are they "real")?

For example:

Classifier 1: 51% accuracy

Classifier 2: 64% accuracy

Dataset size: 78,000

Oversimplifying, statistical significant means "not due to chance" at a certain level. It's like saying "I am 95% sure that there is a difference!" There are statistical tests to prove that. Paired t test is one of them.

Read also "What Does Statistically Significant Mean?":

<http://www.measuringu.com/blog/statistically-significant.php>