Euro Data Set

Wednesday, January 17, 2018 11:04 AM

TEST 1 - 50,000 Initializations :

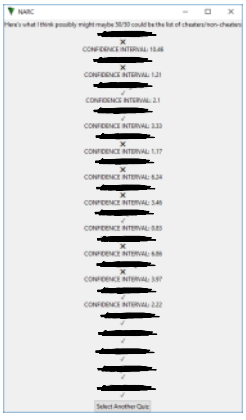
8 True Positive | Avg. Confidence: 1.71
5 True Negative | Avg. Confidence: 3.79

1 False Positive | Avg. Confidence: 3.33
2 False Negative | Avg. Confidence: 7.22

Precision: .88
Recall: .8
F1: .83

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8

TEST 2 - 100,000 Initializations :



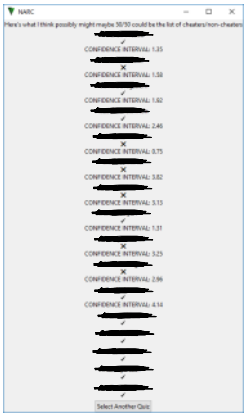
8 True Positive | Avg. Confidence: 1.71
5 True Negative | Avg. Confidence: 3.79

1 False Positive | Avg. Confidence: 3.33
2 False Negative | Avg. Confidence: 7.22

Precision: .88
Recall: .8
F1: .83

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8

TEST 3 - 50,000 Initializations [4 Features]:



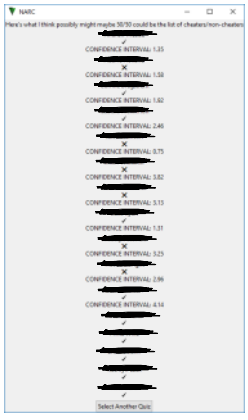
9 True Positive | Avg. Confidence: 2.18
5 True Negative | Avg. Confidence: 2.51

1 False Positive | Avg. Confidence: 2.46
1 False Negative | Avg. Confidence: 2.96

Precision: .9
Recall: .9
F1: .9

Name	average_time_between_questions	score	time_taken	page_leaves
	20.45	0.32	688	8
	20.15	0.76	891	0
	45.30	0.44	1109	7
	28.22	0.60	1039	2
	26.69	0.60	757	0
	20.35	0.84	583	0
	14.96	0.68	538	0
	26.43	0.60	759	22
	19.70	0.64	588	4
	16.90	0.88	539	10
	27.67	0.56	867	8

TEST 4 - 100,000 Initializations [4 Features]:



9 True Positive | Avg. C
5 True Negative | Avg. C

1 False Positive | Avg. C
1 False Negative | Avg. C

Precision: .9
Recall: .9
F1: .9

Name	average_time_between_questions	score	time_taken	page_leaves
	20.45	0.32	688	8
	20.15	0.76	891	0
	45.30	0.44	1109	7
	28.22	0.60	1039	2
	26.69	0.60	757	0
	20.35	0.84	583	0
	14.96	0.68	538	0
	26.43	0.60	759	22
	19.70	0.64	588	4
	16.90	0.88	539	10
	27.67	0.56	867	8

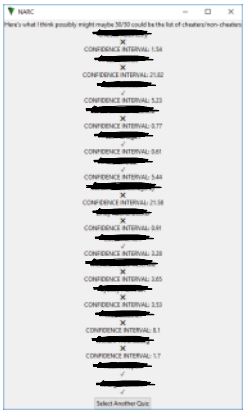
nfidence: 2.18
nfidence: 2.51

nfidence: 2.46
nfidence: 2.96

Psych Data Set

Wednesday, January 17, 2018 11:25 AM

TEST 1 - 50,000 Initializations :



5 True Positive | Avg. Confidence: 3.04
6 True Negative | Avg. Confidence: 3.11

1 False Positive | Avg. Confidence: 5.44
3 False Negative | Avg. Confidence: 14.98

Precision: .83
Recall: .63
F1: .72

Name	average_time_between_questions	time_taken	page_leaves
	24.88	666	6
	20.06	679	2
	30.62	821	12
	23.47	801	0
	23.79	708	16
	30.46	842	1
	20.50	660	16
	23.00	796	0
	28.29	921	24
	17.00	612	0
	20.16	730	0
	21.23	677	0
	11.06	390	0

TEST 2 - 100,000 Initializations :

5 True Positive | Avg. Confidence: 3.04
6 True Negative | Avg. Confidence: 3.11

1 False Positive | Avg. Confidence: 5.44
3 False Negative | Avg. Confidence: 14.98

Precision: .83
Recall: .63
F1: .72

Name	average_time_between_questions	time_taken	page_leaves
	24.88	666	6
	20.06	679	2
	30.62	821	12
	23.47	801	0
	23.79	708	16
	30.46	842	1
	20.50	660	16
	23.00	796	0
	28.29	921	24
	17.00	612	0
	20.16	730	0
	21.23	677	0
	11.06	390	0

TEST 3 - 50,000 Initializations [4 Features]:

6 True Positive | Avg. Confidence: 1.54
5 True Negative | Avg. Confidence: 2.076

2 False Positive | Avg. Confidence: 3.38
2 False Negative | Avg. Confidence: 2.365

Precision: .75
Recall: .75
F1: .75

Name	average_time_between_questions	score	time_taken	page_leaves
	24.88	0.52	666	6
	20.06	0.52	679	2
	30.62	0.44	821	12
	23.47	0.24	801	0
	23.79	0.52	708	16
	30.46	0.44	842	1
	20.50	0.16	660	16
	23.00	0.60	796	0
	28.29	0.76	921	24
	17.00	0.48	612	0
	20.16	0.52	730	0
	21.23	0.48	677	0
	11.06	0.68	390	0

TEST 4 - 100,000 Initializations [4 Features]:

6 True Positive | Avg. Confidem
5 True Negative | Avg. Confiden

2 False Positive | Avg. Confiden
2 False Negative | Avg. Confide

Precision: .75
Recall: .75
F1: .75

Name	average_time_between_questions	score	time_taken	page_leaves
	24.88	0.52	666	6
	20.06	0.52	679	2
	30.62	0.44	821	12
	23.47	0.24	801	0
	23.79	0.52	708	16
	30.46	0.44	842	1
	20.50	0.16	660	16
	23.00	0.60	796	0
	28.29	0.76	921	24
	17.00	0.48	612	0
	20.16	0.52	730	0
	21.23	0.48	677	0
	11.06	0.68	390	0

e: 1.54
ce: 2.076

e: 3.38
ce: 2.365

Summary

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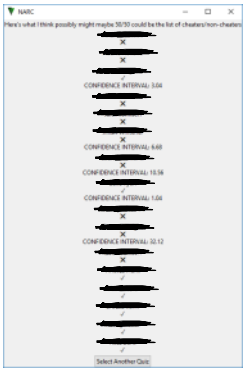
More INIT does effect results in values >= 50,000 (possibly lower)

Adding fourth feature increased F1 score for Euro and Psych Data-set
Adding fourth feature increased Precision for Euro and Recall for Psych

The Kmeans alone definitely remains extremely consistent, however, it also flags positive people who didn't actually cheat. This Is a problem, one that the autoencoder may not face.

TEST 1 - 50,000 Initializations; 500,000 Iterations:



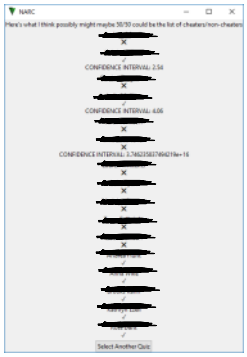
7 True Positives
6 True Negative

3 False Negatives
0 False Positives

Precision: 1
Recall: .7
F1 = .82

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 2 - 50,000 Initializations; 500,000 Iterations:



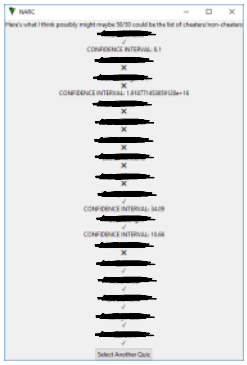
5 True Positives
4 True Negative

5 False Negatives
2 False Positives

Precision: .71
Recall: .58
F1 = .63

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 3 - 50,000 Initializations; 500,000 Iterations:



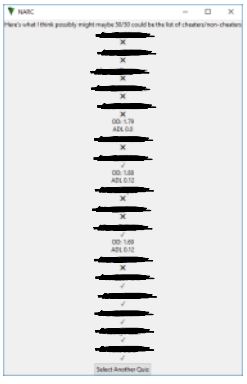
7 True Positives
5 True Negative

3 False Negatives
1 False Positives

Precision: .87
Recall: .7
F1 = .77

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 4 - 50,000 Initializations; 1,000,000 Iterations:



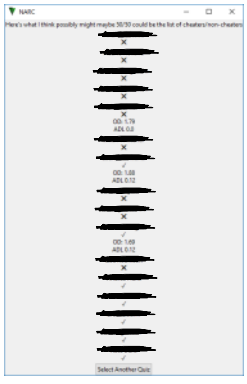
6 True Positives
5 True Negative

4 False Negatives
1 False Positives

Precision: .85
Recall: .6
F1 = .70

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 5 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75% :



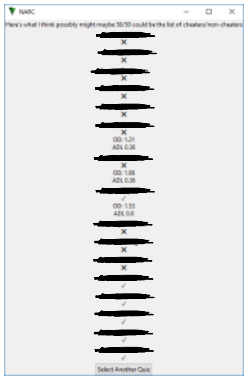
1 True Positives
5 True Negative

4 False Negatives
1 False Positives

Precision: .87
Recall: .7
F1 = .77

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

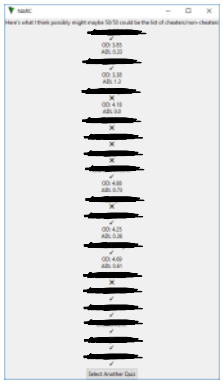
TEST 6 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]:



{'FN': 4, 'FP': 0, 'TP': 6, 'TN': 6}
Precision 1.0
Recall 0.6
F1 0.7499999999999999

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

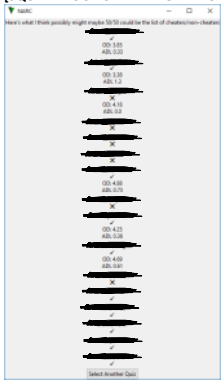
TEST 7 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF AVERAGE ERROR] :



{'FN': 4, 'FP': 0, 'TP': 6, 'TN': 6}
Precision 1.0
Recall 0.6
F1 0.7499999999999999

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2

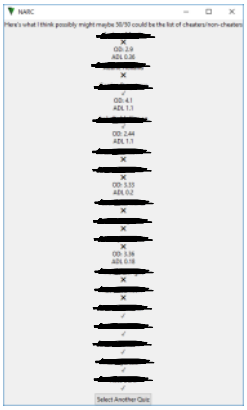
TEST 8 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF AVERAGE ERROR] :



{'FN': 4, 'FP': 0, 'TP': 6, 'TN': 6}
Precision 1.0
Recall 0.6
F1 0.7499999999999999

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0

TEST 9 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :



Precision 0.8571428571428571
Recall 0.6
F1 0.7058823529411764

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8

PI
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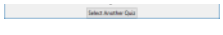
CTURES DO NOT MATCH UP WITH RECALL AND
ERCISION DUE TO PROGRAMMING ERROR
ERCISION AND RECALL WHERE BOTH ACCURATE
N THESE TESTS IGNORE PHOTRO

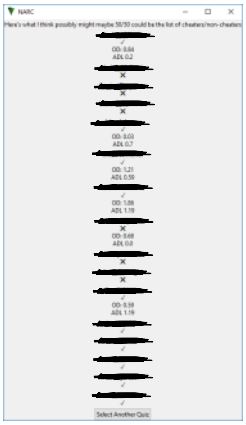


Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

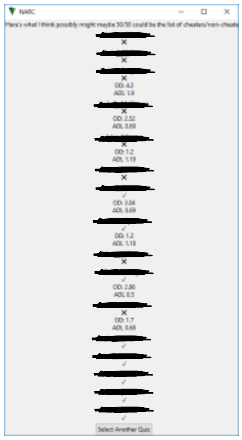
TEST 10 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :



{'FN': 4, 'FP': 0, 'TP': 6, 'TN': 6}
Precision 1.0
Recall 0.6
F1 0.7499999999999999

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

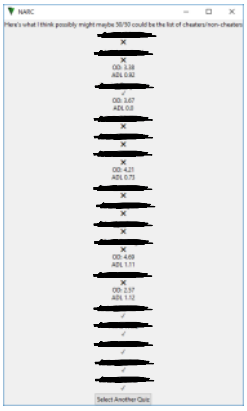
TEST 11 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :



{'FN': 3, 'FP': 1, 'TP': 7, 'TN': 5}
Precision 0.875
Recall 0.7
F1 0.7777777777777777

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

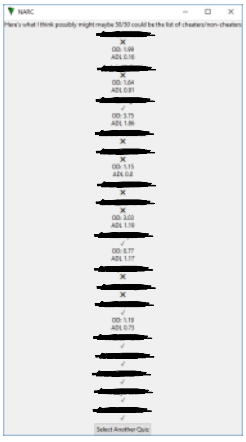
TEST 12 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :



{'FN': 4, 'FP': 0, 'TP': 6, 'TN': 6}
Precision 1.0
Recall 0.6
F1 0.7499999999999999

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

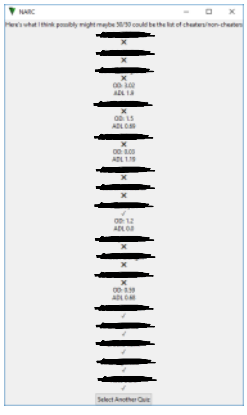
TEST 13 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :



{'FN': 2, 'FP': 0, 'TP': 8, 'TN': 6}
Precision 1.0
Recall 0.8
F1 0.8888888888888889

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

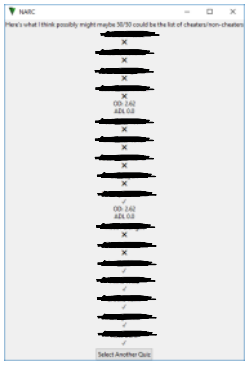
TEST 14 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :



{'FN': 2, 'FP': 0, 'TP': 8, 'TN': 6}
Precision 1.0
Recall 0.8
F1 0.8888888888888889

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 15 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :



{'FN': 5, 'FP': 1, 'TP': 5, 'TN': 5}
Precision 0.8333333333333334
Recall 0.5
F1 0.625

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 16 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :

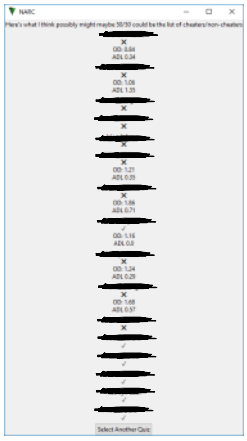
Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 17 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :

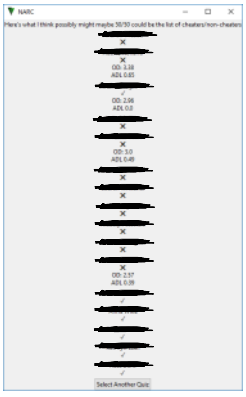
Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 18 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[SQUARE ROOT OF LEN OF ANOMALIES FOR DENOMINATOR] :

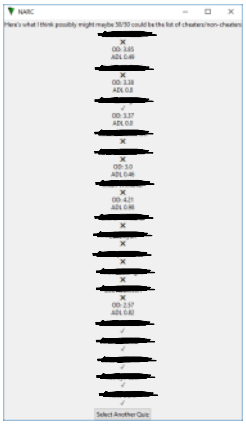
Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA



{'FN': 4, 'FP': 0, 'TP': 6, 'TN': 6}
Precision 1.0
Recall 0.6
F1 0.7499999999999999



{'FN': 4, 'FP': 0, 'TP': 6, 'TN': 6}
Precision 1.0
Recall 0.6
F1 0.7499999999999999



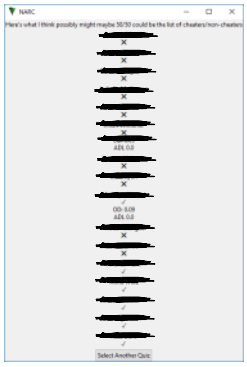
{'FN': 4, 'FP': 0, 'TP': 6, 'TN': 6}
Precision 1.0
Recall 0.6
F1 0.7499999999999999

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

TEST 19 - 50,000 Initializations; 500,000 Iterations
[THRESHOLD FOR PRE-FLAGS INCREASED FROM 50 to 75%]
[Average Error / 2 for separation threshold] :



{'FN': 5, 'FP': 1, 'TP': 5, 'TN': 5}
Precision 0.8333333333333334
Recall 0.5
F1 0.625

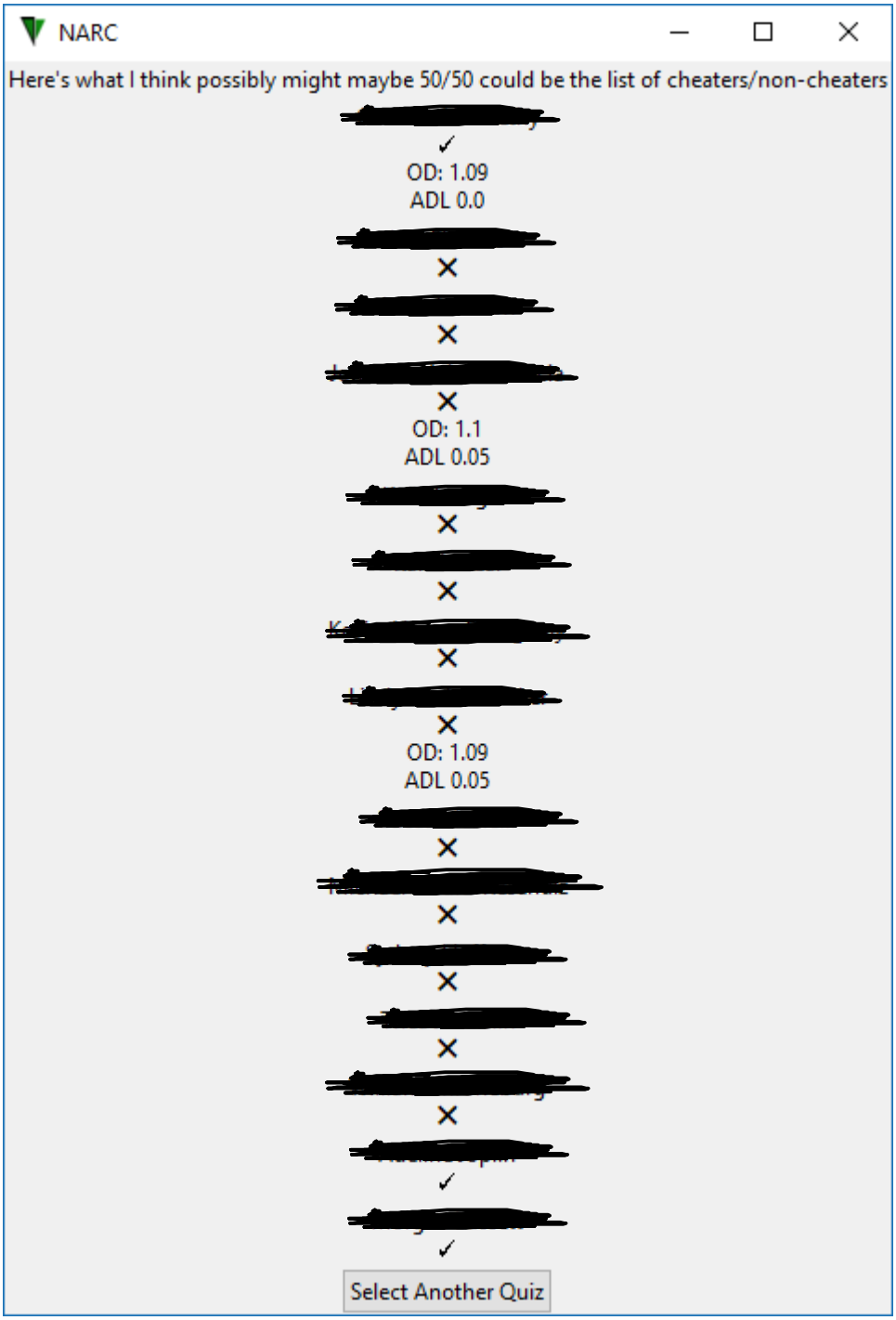
This experiment highlights what happens when a fake cheater (i.e someone who left the page but didn't appear to be actually cheating) and a non-cheater are both classified as anomalies. Here, it looks like their clusters are closely related. In future, the cluster will automatically be invalidated if the distances are < 1 as seen here (possibly to be adjusted in the future).

Name	average_time_between_questions	time_taken	page_leaves
	20.45	688	8
	20.15	891	0
	45.30	1109	7
	28.22	1039	2
	26.69	757	0
	20.35	583	0
	14.96	538	0
	26.43	759	22
	19.70	588	4
	16.90	539	10
	27.67	867	8
	52.31	1308	CA
	41.94	1001	CA
	44.00	1042	CA
	24.13	870	CA
	28.63	812	CA

Psych Data Set

Wednesday, January 17, 2018 7:18 PM

TEST 1 - 50,000 Initializations; 500,000 Iterations:



3 True Positives
7 True Negatives

0 False Positives
5 False Negatives

Percision: 1
Recall: .37
F1: .54

	average_time_between_questions	time_taken	page_leaves

	24.88	666	6
	20.06	679	2
	30.62	821	12
	23.47	801	0
	23.79	708	16
	30.46	842	1
	20.50	660	16
	23.00	796	0
	28.29	921	24
	17.00	612	0
	20.16	730	0
	21.23	677	0
	11.06	390	0

Euro Data Set

Friday, January 19, 2018 4:05 PM

TEST 1 - 50,000 Initializations; 500,000 Iterations:

8 True Positives
4 True Negative

2 False Negatives
2 False Positives

Precision: .8
Recall: .8
F1 = .8

Name	average_time_between_questions	time_taken	page_leaves
Andrew Meade	20.45	688	8
Aubrie Holland	20.15	891	0
Corrine Dragstrem	45.30	1109	7
Isabella McKinnon	28.22	1039	2
Jalen Johnson	26.69	757	0
Jillian Whitener	20.35	583	0
Lauren Whitener	14.96	538	0
Luke Ryan	26.43	759	22
Madelyn Stewart	19.70	588	4
Trace Fulbright	16.90	539	10
Zoe Robinson	27.67	867	8

TEST 2 - 50,000 Initializations; 500,000 Iterations:

6 True Positives
6 True Negative

4 False Negatives
0 False Positives

Precision: 1
Recall: .6
F1 = .75

Name	average_time_between_questions	time_taken	page_leaves
Andrew Meade	20.45	688	8
Aubrie Holland	20.15	891	0
Corrine Dragstrem	45.30	1109	7
Isabella McKinnon	28.22	1039	2
Jalen Johnson	26.69	757	0
Jillian Whitener	20.35	583	0
Lauren Whitener	14.96	538	0
Luke Ryan	26.43	759	22
Madelyn Stewart	19.70	588	4
Trace Fulbright	16.90	539	10
Zoe Robinson	27.67	867	8

TEST 3 - 50,000 Initializations; 1,000,000 Iterations:

6 True Positives
6 True Negative

4 False Negatives
0 False Positives

Precision: 1
Recall: .6
F1 = .75

Name	average_time_between_questions	time_taken	page_leaves
Andrew Meade	20.45	688	8
Aubrie Holland	20.15	891	0
Corrine Dragstrem	45.30	1109	7
Isabella McKinnon	28.22	1039	2
Jalen Johnson	26.69	757	0
Jillian Whitener	20.35	583	0
Lauren Whitener	14.96	538	0
Luke Ryan	26.43	759	22
Madelyn Stewart	19.70	588	4
Trace Fulbright	16.90	539	10
Zoe Robinson	27.67	867	8

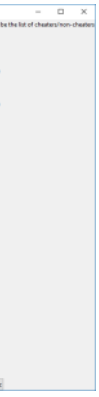
TEST 4 - 50,000 Initializations; 500,000 Iterations:

	changed_questions	average_time_between_questions	time_taken	page_leaves
Andrew Meade	2	20.45	688	8
Aubrie Holland	1	20.15	891	0
Corrine Dragstrem	0	45.30	1109	7
Isabella McKinnon	3	28.22	1039	2
Jalen Johnson	0	26.69	757	0
Jillian Whitener	2	20.35	583	0
Lauren Whitener	1	14.96	538	0
Luke Ryan	3	26.43	759	22
Madelyn Stewart	1	19.70	588	4
Trace Fulbright	5	16.90	539	10
Zoe Robinson	2	27.67	867	8

TEST 5 - 50,000 Initializa

	changed_questions	average_
Andrew Meade	2	20.45
Aubrie Holland	1	20.15
Corrine Dragstrem	0	45.30
Isabella McKinnon	3	28.22
Jalen Johnson	0	26.69
Jillian Whitener	2	20.35
Lauren Whitener	1	14.96
Luke Ryan	3	26.43
Madelyn Stewart	1	19.70
Trace Fulbright	5	16.90
Zoe Robinson	2	27.67

ations; 500,000 Iterations:



time_between_questions	time_taken	page_leaves
	688	8
	891	0
	1109	7
	1039	2
	757	0
	583	0
	538	0
	759	22
	588	4
	539	10
	867	8

Results

Saturday, January 20, 2018 9:20 AM

PCA modifies the Data Set in ways that don't make sense for the regression problem that is the autoencoder. I don't know what I was thinking

Therefore, it has been removed.

Classification

Saturday, January 20, 2018 9:37 AM

$$\text{Precision} = \frac{tp}{tp + fp}$$

$$\text{Recall} = \frac{tp}{tp + fn}$$

$$2 \cdot \frac{precision \cdot recall}{precision + recall}$$

These are used on the unsupervised cluster and anomaly detection, since technically the goal is classification, the methodology is clustering. This is a very non-traditional model validation for unsupervised algorithms, but in this case it makes sense due to the very close relationship this problem has with classification.

WIP

Sunday, January 21, 2018 11:44 AM