Experiment Report: russian_bot_genuine_users_300k dataset

Dataset details:
300 000 human tweets - 347 accounts
300 000 bot tweets - 106 accounts

Experiment details:
5-fold stratified cross validation, sets split on user id

Features used:
'followerscount','friendscount','replycount','likecount','retweetcount','hashtagcount','mentioncount','urlcount'

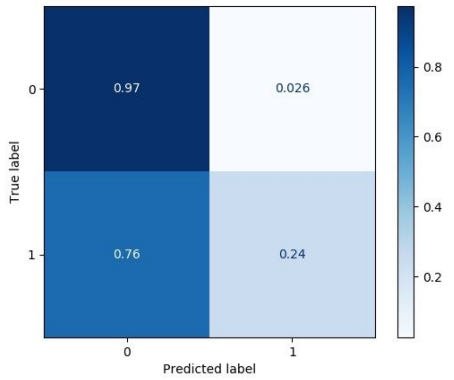
Linear Regression Results

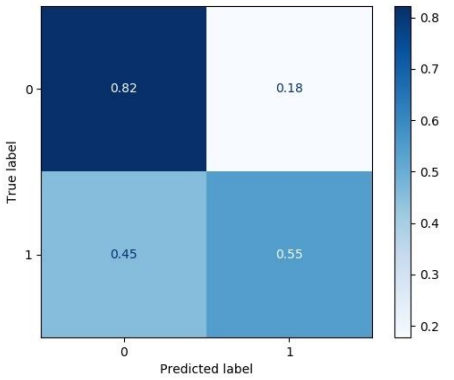
5-fold cross-validation

Fold #	Test Accuracy (%)	Class Distribution (Humans/Bots)	False-Positives (%)	False-Negatives (%)
1	51	54/46	3	76
2	76	45/55	18	45
3	72	50/50	13	43
4	70	56/44	26	33
5	72	47/53	41	22
Avg.	68,2			43,8

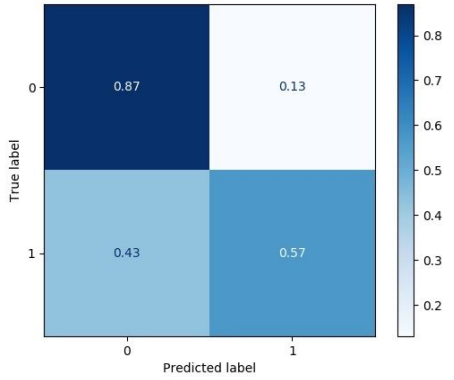
Confusion Matrices

Test Fold 1	Test Fold 2

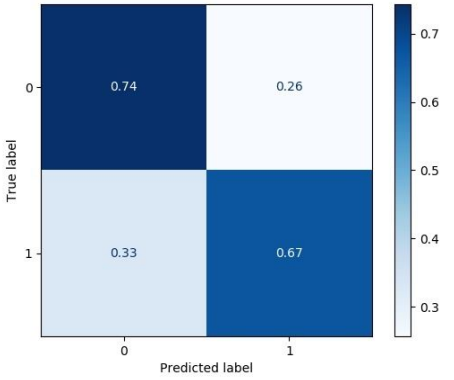




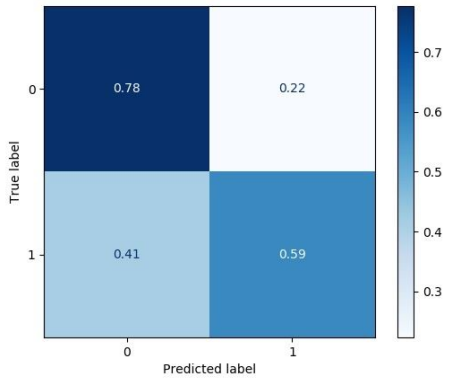
Test Fold 3



Test Fold 4



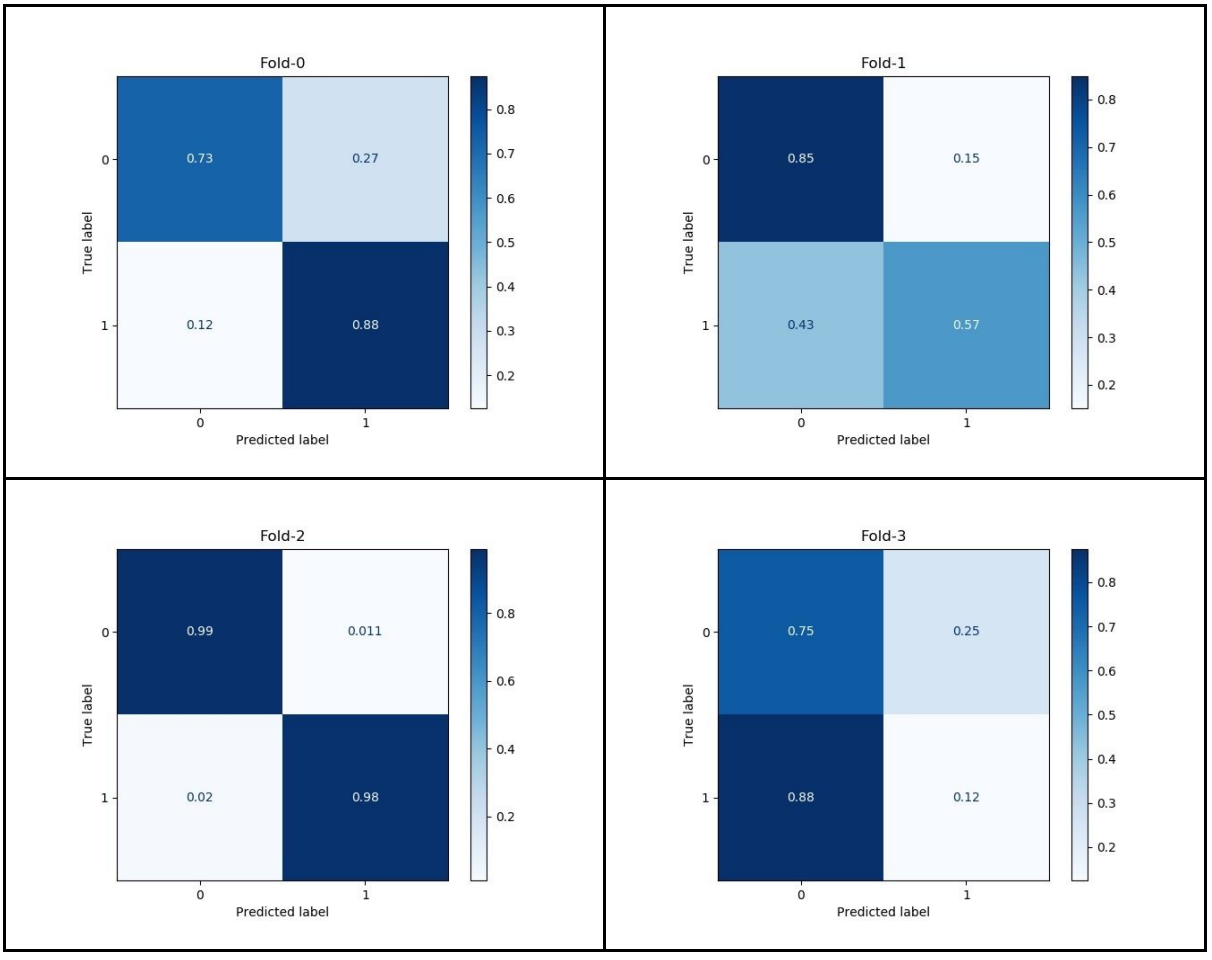
Test Fold 5

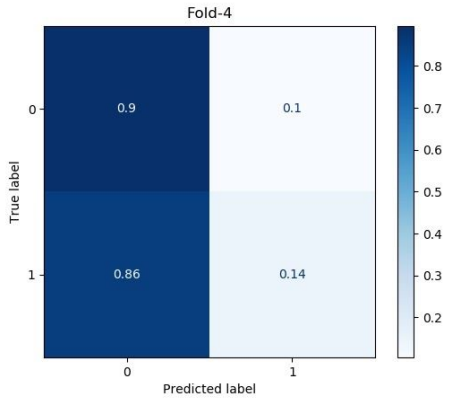


Random Forest Results
n_estimators (Trees in the forest) = 100
criterion = gini
max_depth = sklearn default

Fold #	Test Accuracy (%)	Class Distribution (Humans/Bots)	False-Positives (%)	False-Negatives (%)
1	75	45/55	27	12
2	74	47/53	15	43
3	99	47/53	1	2
4	30	62/38	25	88
5	49	51/49	10	86
Avg.	65,4		15,6	46,2

Confusion Matrices



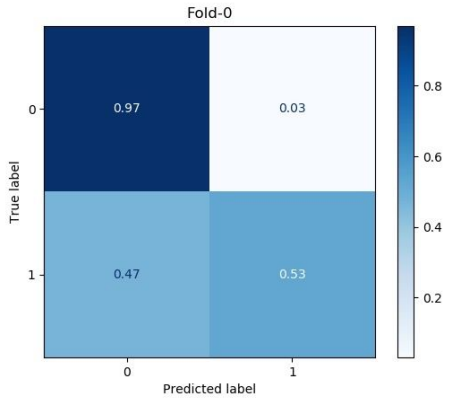


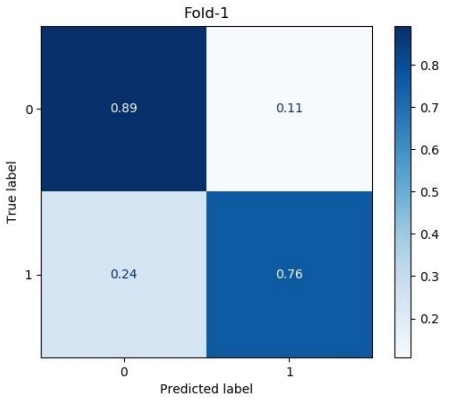
ADABoostClassifier Results

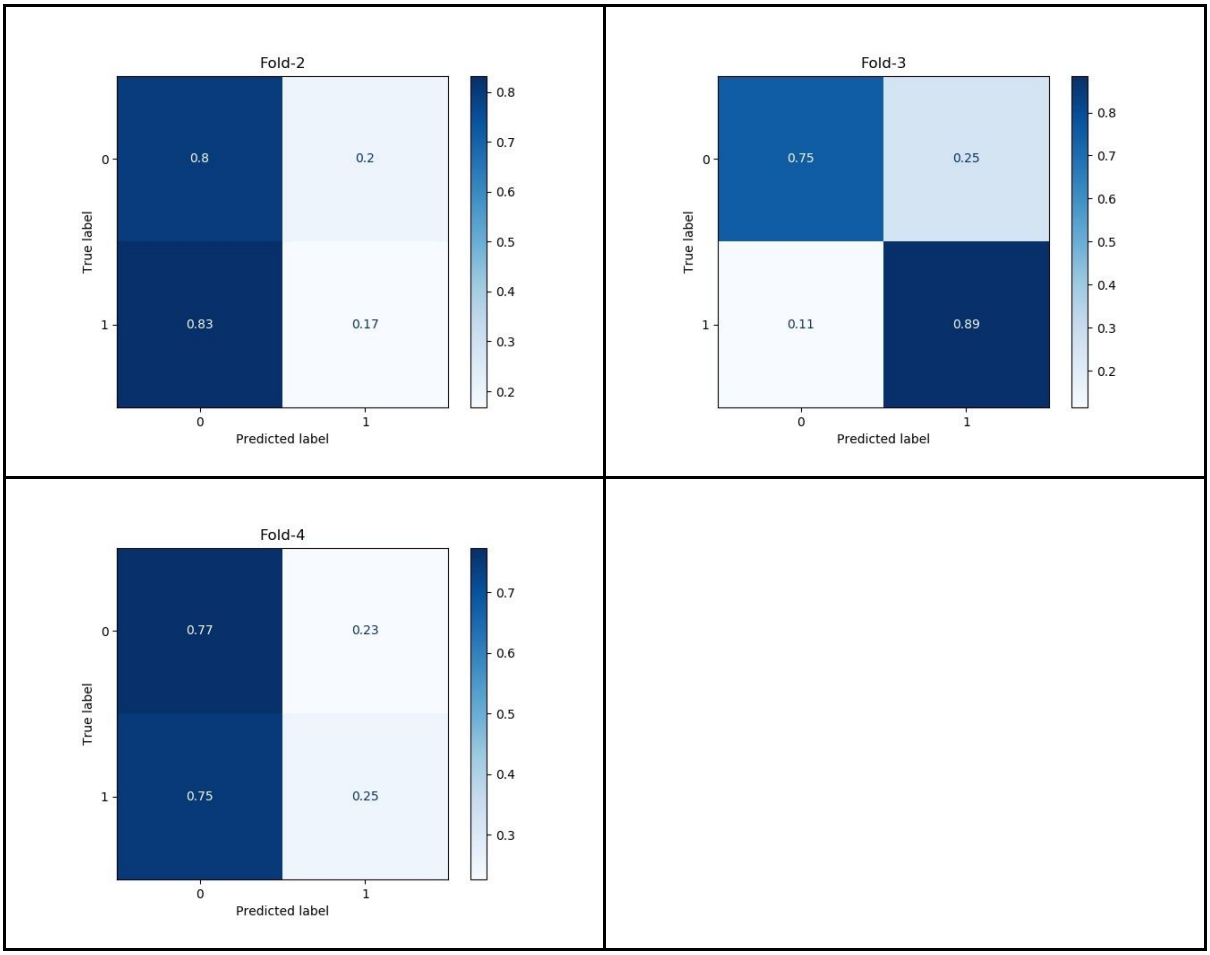
Default parameters

Fold #	Test Accuracy (%)	Class Distribution (Humans/Bots)	False-Positives (%)	False-Negatives (%)
1	91	45/55	3	47
2	85	47/53	11	24
3	41	54/46	20	83
4	81	48/52	25	11
5	42	57/43	23	75
Avg.	68		16,4	48

Confusion Matrices







Multi-Layer Perceptron (MLP Classifier) Results

Parameters:

2 hidden layers, 32 neurons each

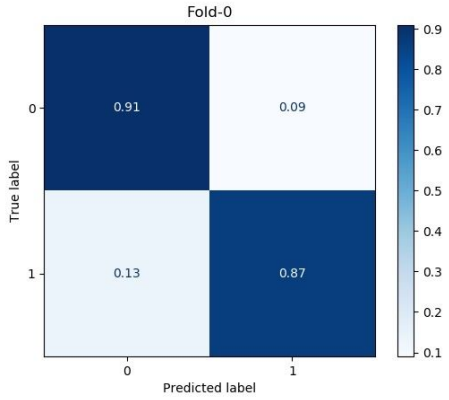
50 epochs

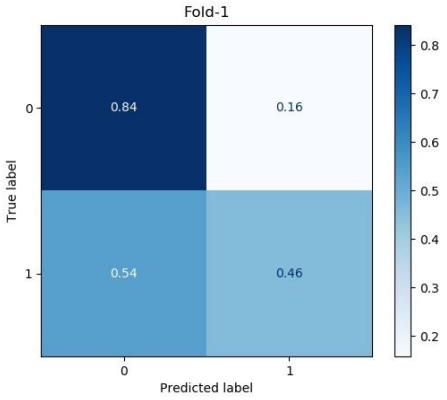
Adam optimizer

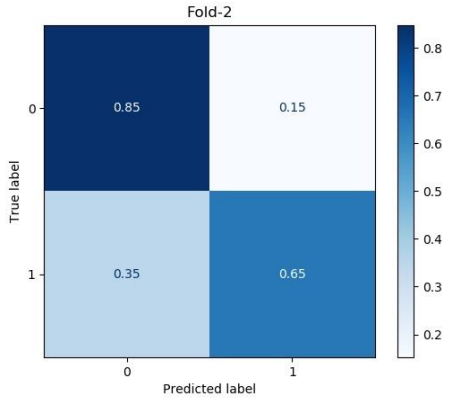
default otherwise

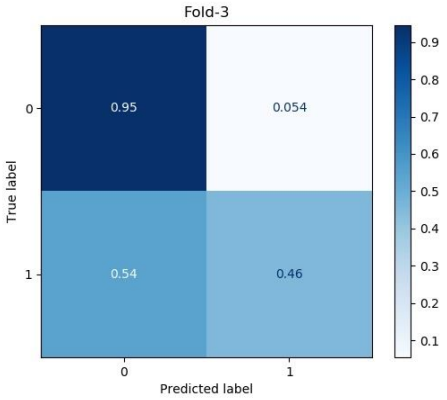
Fold #	Test Accuracy (%)	Class Distribution (Humans/Bots)	False-Positives (%)	False-Negatives (%)
1	89	48/52	9	13
2	78	45/55	16	54
3	73	52/48	15	35
4	60	62/38	5	54
5	86	46/54	11	27
Avg.	77,2		11,2	36,6

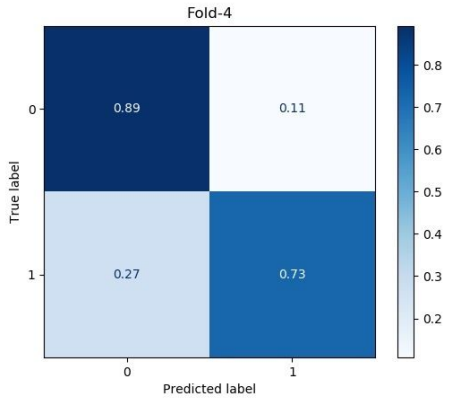
Confusion matrices







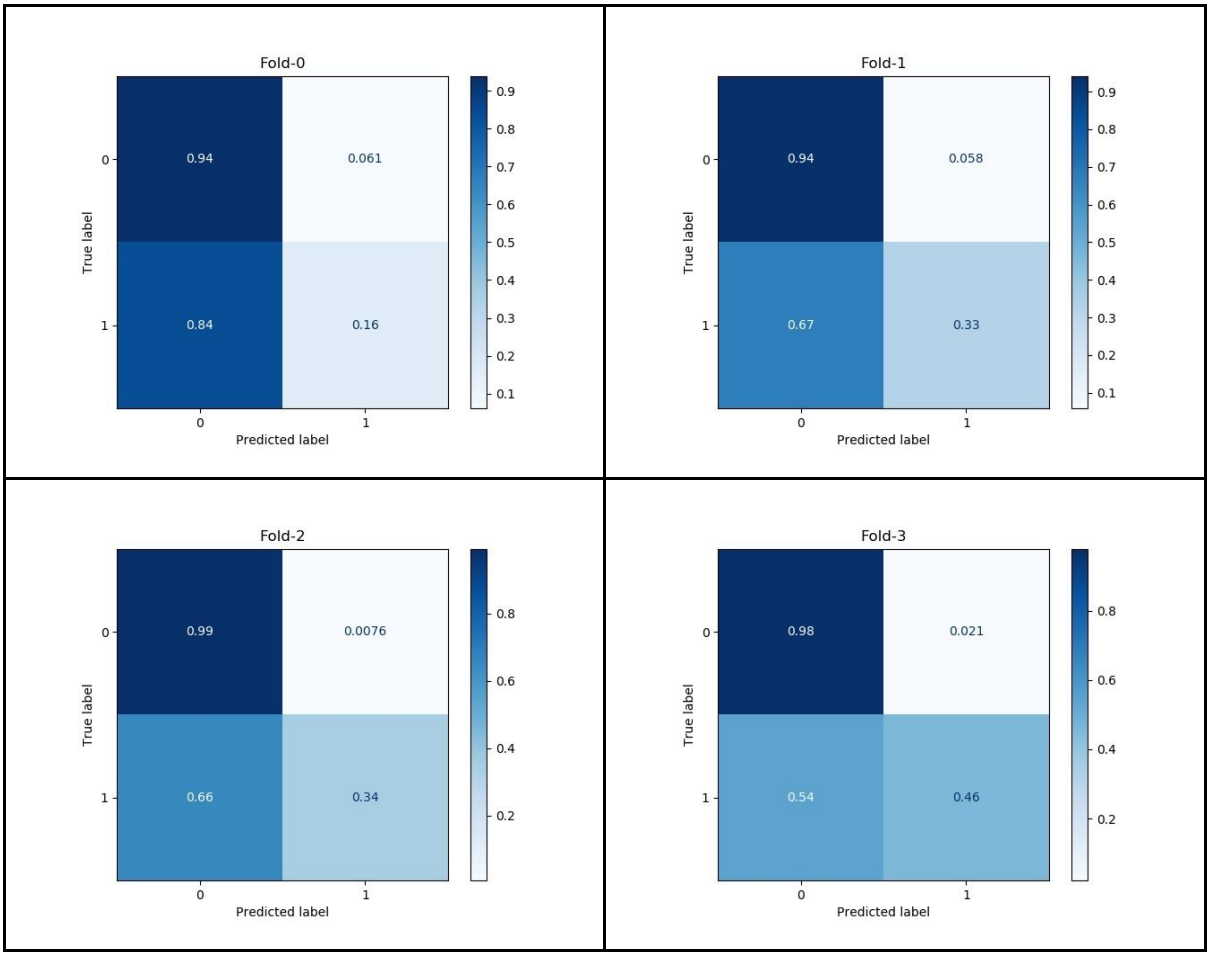


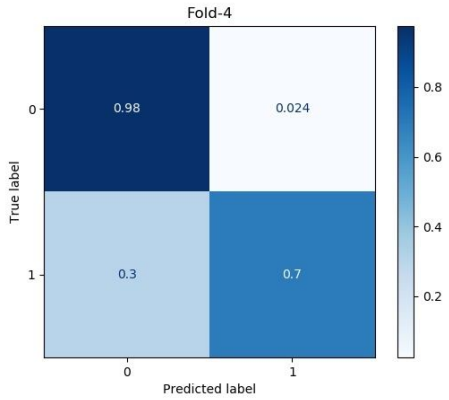


Gaussian Naive Bayes Classifier
Parameters:
default

Fold #	Test Accuracy (%)	Class Distribution (Humans/Bots)	False-Positives (%)	False-Negatives (%)
1	42	57/43	6	84
2	59	52/48	6	67
3	87	45/55	1	66
4	71	51/49	2	54
5	90	46/54	2	30
	69,8		3,4	60,2

Confusion Matrices





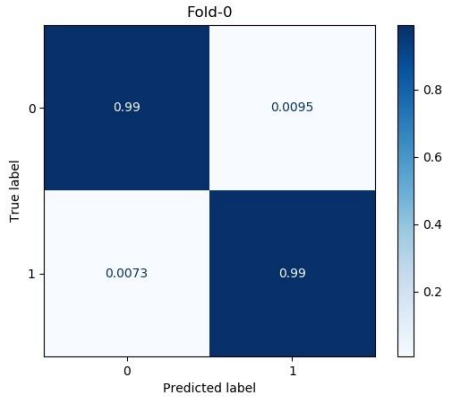
K Nearest Neighbors Classifier Results

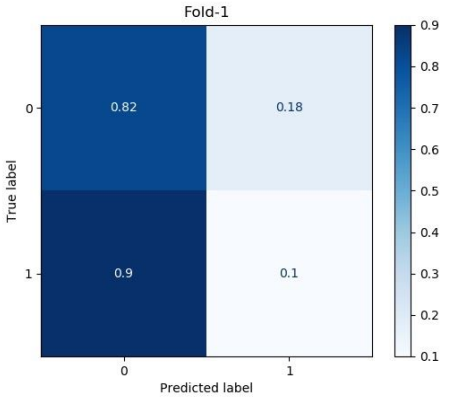
Parameters:

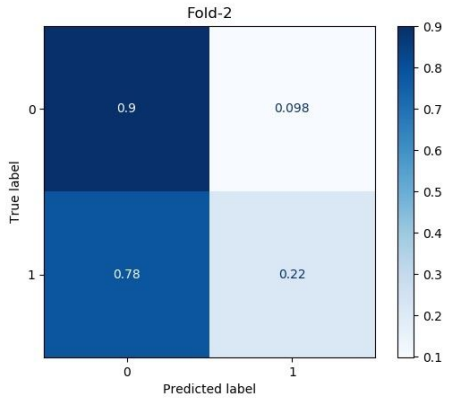
default

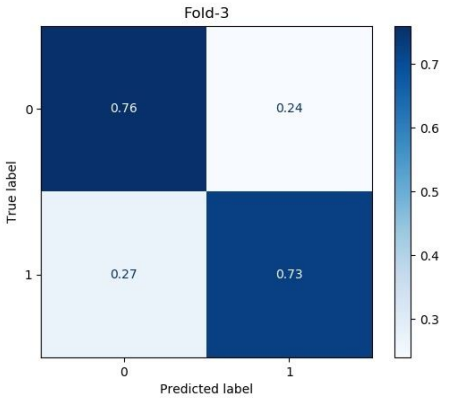
Fold #	Test Accuracy (%)	Class Distribution (Humans/Bots)	False-Positives (%)	False-Negatives (%)
1	99	48/52	1	1
2	33	58/42	18	90
3	47	55/45	10	78
4	75	46/54	24	27
5	84	46/54	19	4
	67,6		14,4	40

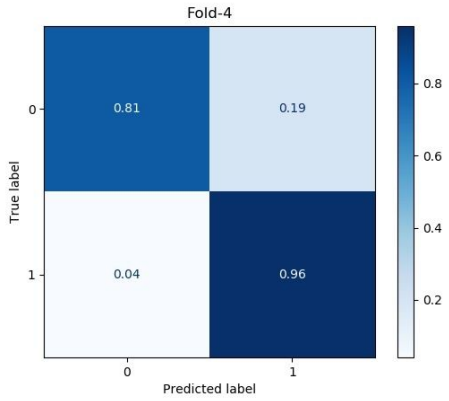
Confusion matrices






Fold-2
0.9
0.098
0.78
0.22
True label
Predicted label
0
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1


Fold-3
0.76
0.24
0.27
0.73
True label
Predicted label
0
1
0.7
0.6
0.5
0.4
0.3


Fold-4
0.81
0.19
0.04
0.96
True label
Predicted label
0
1
0.8
0.6
0.4
0.2