Empirical Study on Text Classification

Model	Feature	Accuracy	F1-score
Naive Bayes	Count Vector-(i)	0.838	0.8382524758
Naive Bayes	WordLevel TF-IDF-(ii)	0.8452	0.8453507711
Naive Bayes	N-Gram Vectors TF-IDF-(iii)	0.8376	0.8376332813
Naive Bayes	CharLevel Vectors TF-IDF-(iv)	0.812	0.8122405386
Naive Bayes	(i)+(ii)	0.84	0.8402340112
Naive Bayes	(i)+(iii)	0.8432	0.8434195576
Naive Bayes	(i)+(iv)	0.8388	0.8389830844
Naive Bayes	(ii)+(iii)	0.87	0.8700029338
Naive Bayes	(ii)+(iv)	0.8476	0.8476850766
Naive Bayes	(iii)+(iv)	0.852	0.8519909054
Naive Bayes	(i)+(ii)+(iii)	0.8464	0.8465701869
Naive Bayes	(i)+(ii)+(iv)	0.84	0.8401862165
Naive Bayes	(i)+(iii)+(iv)	0.8468	0.8469572768
Naive Bayes	(ii)+(iii)+(iv)	0.8468	0.8469572768
Naive Bayes	(i)+(ii)+(iii)+(iv)	0.8488	0.8489512198
Linear Classifier	Count Vector-(i)	0.8484	0.8695919869
Linear Classifier	WordLevel TF-IDF-(ii)	0.86	0.8764205199
Linear Classifier	N-Gram Vectors TF-IDF-(iii)	0.8344	0.8364271607
Linear Classifier	CharLevel Vectors TF-IDF-(iv)	0.8368	0.8412153793
Linear Classifier	(i)+(ii)	0.87	0.8699924483
Linear Classifier	(i)+(iii)	0.874	0.8739912292
Linear Classifier	(i)+(iv)	0.8692	0.8691934064
Linear Classifier	(ii)+(iii)	0.8852	0.8852162647
Linear Classifier	(ii)+(iv)	0.8764	0.876407063
Linear Classifier	(iii)+(iv)	0.8788	0.8788069258
Linear Classifier	(i)+(ii)+(iii)	0.8732	0.8731911735
Linear Classifier	(i)+(ii)+(iv)	0.8696	0.8695939899
Linear Classifier	(i)+(iii)+(iv)	0.8752	0.875194248
Linear Classifier	(ii)+(iii)+(iv)	0.8752	0.875194248
Linear Classifier	(i)+(ii)+(iii)+(iv)	0.8744	0.8743931661
Support Vector Machine	Count Vector-(i)	0.8488	0.8488232377
Support Vector Machine	WordLevel TF-IDF-(ii)	0.88	0.8800129089
Support Vector Machine	N-Gram Vectors TF-IDF-(iii)	0.88	0.8800129089
Support Vector Machine	CharLevel Vectors TF-IDF-(iv)	0.8512	0.8512265861
Support Vector Machine	(i)+(ii)	0.8504	0.850426729
Support Vector Machine	(i)+(iii)	0.8508	0.85082477
Support Vector Machine	(i)+(iv)	0.8508	0.8508285929
Support Vector Machine	(ii)+(iii)	0.8852	0.8852025908
Support Vector Machine	(ii)+(iv)	0.8768	0.8768132531
Support Vector Machine	(iii)+(iv)	0.8808	0.8808079374
Support Vector Machine	(i)+(ii)+(iii)	0.852	0.8520227459
Support Vector Machine	(i)+(ii)+(iv)	0.8516	0.8516284396
Support Vector Machine	(i)+(iii)+(iv)	0.852	0.8520227459
Support Vector Machine	(ii)+(iii)+(iv)	0.852	0.8520227459
Support Vector Machine	(i)+(ii)+(iii)+(iv)	0.8532	0.8532207985
Extreme Gradient Boosting	Count Vector-(i)	0.8116	0.8116700956
Extreme Gradient Boosting	WordLevel TF-IDF-(ii)	0.8036	0.8092709885
Extreme Gradient Boosting	N-Gram Vectors TF-IDF-(iii)	0.7388	0.7439053148
Extreme Gradient Boosting	CharLevel Vectors TF-IDF-(iv)	0.8088	0.8135885457
Extreme Gradient Boosting	(i)+(ii)	0.8068	0.8068592562
Extreme Gradient Boosting	(i)+(iii)	0.8184	0.8185125397
Extreme Gradient Boosting	(i)+(iv)	0.8256	0.8256150684
Extreme Gradient Boosting	(ii)+(iii)	0.8124	0.8124697979
Extreme Gradient Boosting	(ii)+(iv)	0.824	0.8240408915
Extreme Gradient Boosting	(iii)+(iv)	0.824	0.8239891863
Extreme Gradient Boosting	(i)+(ii)+(iii)	0.8132	0.813251562
Extreme Gradient Boosting	(i)+(ii)+(iv)	0.818	0.8180215785
Extreme Gradient Boosting	(i)+(iii)+(iv)	0.826	0.8260333264
Extreme Gradient Boosting	(ii)+(iii)+(iv)	0.826	0.8260333264
Extreme Gradient Boosting	(i)+(ii)+(iii)+(iv)	0.8212	0.8212342458
Shallow Neural Network	Count Vector-(i)	0.8624	0.8708125068
Shallow Neural Network	WordLevel TF-IDF-(ii)	0.8632	0.8676572465
Shallow Neural Network	N-Gram Vectors TF-IDF-(iii)	0.8308	0.838903428
Shallow Neural Network	CharLevel Vectors TF-IDF-(iv)	0.8176	0.840046597
Shallow Neural Network	(i)+(ii)	0.8712	0.8712457563
Shallow Neural Network	(i)+(iii)	0.8748	0.8748049079
Shallow Neural Network	(i)+(iv)	0.874	0.8741098244
Shallow Neural Network	(ii)+(iii)	0.8892	0.8892025005
Shallow Neural Network	(ii)+(iv)	0.878	0.8779907271
Shallow Neural Network	(iii)+(iv)	0.8764	0.8764379412
Shallow Neural Network	(i)+(ii)+(iii)	0.8772	0.8772027704
Shallow Neural Network	(i)+(ii)+(iv)	0.8688	0.868945368
Shallow Neural Network	(i)+(iii)+(iv)	0.8776	0.8777494517
Shallow Neural Network	(ii)+(iii)+(iv)	0.8828	0.8827963425
Shallow Neural Network	(i)+(ii)+(iii)+(iv)	0.878	0.8781981353
CNN	FastText	0.8228	0.8228339589
CNN	Glove	0.8092	0.809254536

Accuracy and F1-score — Naive Bayes
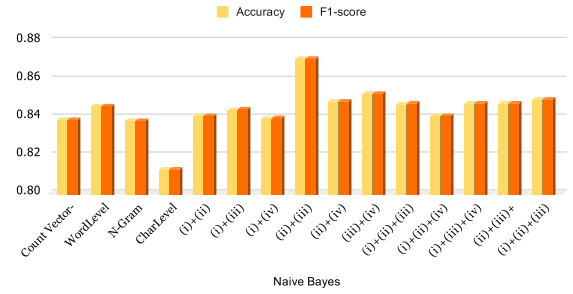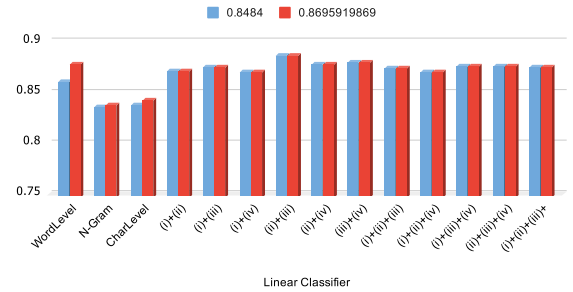
Accuracy and F1-score — Linear Classifier

Accuracy and F1-score — Support Vector Machine

Accuracy and F1-score — Extreme Gradient Boosting

Accuracy and F1-score — Shallow Neural Network
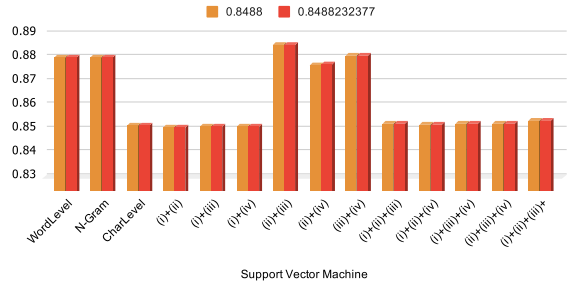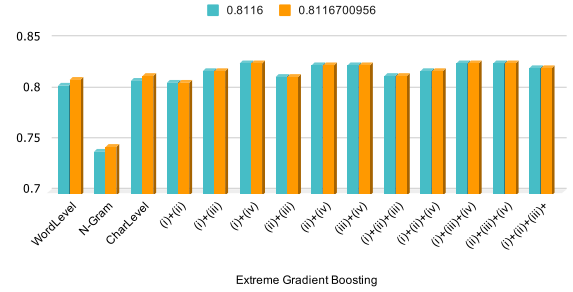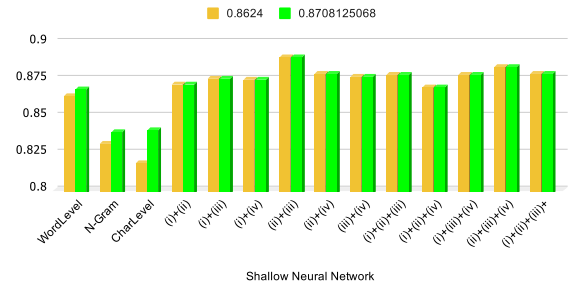
Empirical Study on Text Classification

CNN	Word2Vec	0.836	0.836265454
RNN_LSTM	FastText	0.7976	0.79760622
RNN_LSTM	Glove	0.7884	0.78844865
RNN_LSTM	Word2Vec	0.7716	0.771645653
RNN_GRU	FastText	0.7652	0.7724660857
RNN_GRU	Glove	0.7916	0.7916453275
RNN_GRU	Word2Vec	0.7804	0.78047527
Bidirectional_RNN	FastText	0.792	0.79248
Bidirectional_RNN	Glove	0.796	0.796745
Bidirectional_RNN	Word2Vec	0.7848	0.7848528
RCNN	FastText	0.8276	0.8276584452
RCNN	Glove	0.8004	0.8004758
RCNN	Word2Vec	0.8284	0.8284857