Results dump

Cross validation character n-grams tfidf

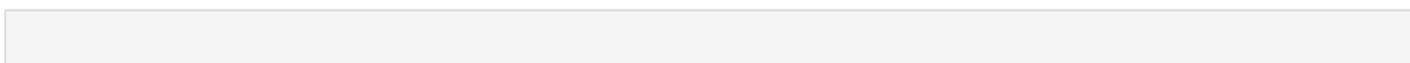F1-score Task A 0.6440953412784399

```
          precision    recall  f1-score   support
       0  0.64831953 0.69214769 0.66951710      1923        1  0.66760247 0.62218734
 0.64409534      1911


  micro avg  0.65727700 0.65727700 0.65727700      3834   macro avg  0.65796100 0.65716751
 0.65680622      3834
weighted avg  0.65793082 0.65727700 0.65684601      3834
```

Embeddings with averages

```
F1-score Task A 0.5545722713864307                 precision    recall  f1-score
support
       0  0.70503597 0.62156448 0.66067416       473        1  0.51226158 0.60450161
 0.55457227       311
  micro avg  0.61479592 0.61479592 0.61479592       784   macro avg  0.60864878 0.61303304
 0.60762321       784
weighted avg  0.62856552 0.61479592 0.61858527       784
```

Embeddings with sums

```
F1-score Task A 0.3297644539614561                 precision    recall  f1-score
support
           0  0.62738854 0.83298097 0.71571299      473         1  0.49358974 0.24758842
0.32976445      311
   micro avg  0.60076531 0.60076531 0.60076531      784   macro avg  0.56048914 0.54028470
0.52273872      784
weighted avg  0.57431274 0.60076531 0.56261351      784
```

Trial data character n-grams tfidf

```
{'classify__C': 100, 'classify__gamma': 'scale', 'reduce_dim__k': 10000}F1-score Task A
0.6191198786039454
           precision    recall  f1-score    support
        0  0.75458716 0.69556025 0.72387239      473         1  0.58620690 0.65594855
0.61911988      311
   micro avg  0.67984694 0.67984694 0.67984694      784   macro avg  0.67039703 0.67575440
0.67149613      784
weighted avg  0.68779346 0.67984694 0.68231878      784
```

Trial data character n-grams with cheating to match skew in test data

```
Best parameters: {'classify__C': 100, 'classify__class_weight': {0: 0.75, 1: 1.5},
'classify__gamma': 'scale', 'reduce_dim__k': 10000}F1-score Task A
0.6388206388206388
           precision    recall  f1-score    support
        0  0.81850534 0.48625793 0.61007958      473         1  0.51689861 0.83601286
0.63882064      311
   micro avg  0.62500000 0.62500000 0.62500000      784   macro avg  0.66770197 0.66113539
0.62445011      784
weighted avg  0.69886287 0.62500000 0.62148069      784
```

Trial data character n-grams mpqa skew

in test data

MI

```
Fitting 5 folds for each of 5 candidates, totalling 25 fits[Parallel(n_jobs=-1)]: Using
backend LokyBackend with 16 concurrent workers.[Parallel(n_jobs=-1)]: Done  20 out of  25 |
elapsed:   14.3s remaining:    3.6s[Parallel(n_jobs=-1)]: Done  25 out of  25 | elapsed:
14.4s finished
Grid scores on training set:
  'precision', 'predicted', average, warn_for)              precision    recall  f1-score
support
          0  0.00000000 0.00000000 0.00000000       473          1  0.39668367 1.00000000
0.56803653       311
   micro avg  0.39668367 0.39668367 0.39668367       784   macro avg  0.19834184 0.50000000
0.28401826       784
weighted avg  0.15735794 0.39668367 0.22533082       784
Best parameters:
{'C': 100, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.6067415730337078
            precision    recall  f1-score    support
          0  0.87931034 0.21564482 0.34634975       473          1  0.44461078 0.95498392
0.60674157       311
   micro avg  0.50892857 0.50892857 0.50892857       784   macro avg  0.66196056 0.58531437
0.47654566       784
weighted avg  0.70687212 0.50892857 0.44964293       784
Best parameters:
{'C': 100, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.6211180124223602
            precision    recall  f1-score    support
          0  0.91472868 0.24947146 0.39202658       473          1  0.45801527 0.96463023
0.62111801       311
   micro avg  0.53316327 0.53316327 0.53316327       784   macro avg  0.68637197 0.60705084
0.50657230       784
weighted avg  0.73355793 0.53316327 0.48290341       784
Best parameters:
{'C': 100, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.6282722513089005
```

```
                precision    recall  f1-score    support
          0  0.92142857 0.27272727 0.42088091        473           1  0.46583851 0.96463023
0.62827225        311
    micro avg  0.54719388 0.54719388 0.54719388        784   macro avg  0.69363354 0.61867875
0.52457658        784
weighted avg  0.74070343 0.54719388 0.50314967        784
Best parameters:
{'C': 100, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.6251319957761351
                precision    recall  f1-score    support
          0  0.89864865 0.28118393 0.42834138        473           1  0.46540881 0.95176849
0.62513200        311
    micro avg  0.54719388 0.54719388 0.54719388        784   macro avg  0.68202873 0.61647621
0.52673669        784
weighted avg  0.72678948 0.54719388 0.50640501        784
Best parameters:
{'C': 100, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.6272439281942978
                precision    recall  f1-score    support
          0  0.90540541 0.28329810 0.43156200        473           1  0.46698113 0.95498392
0.62724393        311
    micro avg  0.54974490 0.54974490 0.54974490        784   macro avg  0.68619327 0.61914101
0.52940296        784
weighted avg  0.73148965 0.54974490 0.50918582        784
Best parameters:
{'C': 100, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.6314677930306231
                precision    recall  f1-score    support
          0  0.91891892 0.28752643 0.43800322        473           1  0.47012579 0.96141479
0.63146779        311
    micro avg  0.55484694 0.55484694 0.55484694        784   macro avg  0.69452235 0.62447061
0.53473551        784
weighted avg  0.74089001 0.55484694 0.51474746        784
```

Chi2

```
Grid scores on training set:
```

```
Best parameters:
{'C': 100, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.5821596244131456
              precision    recall  f1-score   support
           0  0.96666667 0.06131078 0.11530815       473           1  0.41114058 0.99678457
0.58215962       311
   micro avg  0.43239796 0.43239796 0.43239796       784   macro avg  0.68890363 0.52904767
0.34873389       784
weighted avg  0.74629854 0.43239796 0.30050051       784
Best parameters:
{'C': 10, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.5944881889763779
              precision    recall  f1-score   support
           0  0.88607595 0.14799154 0.25362319       473           1  0.42836879 0.97106109
0.59448819       311
   micro avg  0.47448980 0.47448980 0.47448980       784   macro avg  0.65722237 0.55952632
0.42405569       784
weighted avg  0.70451099 0.47448980 0.38883877       784
Best parameters:
{'C': 10, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.59765625
              precision    recall  f1-score   support
           0  0.92957746 0.13953488 0.24264706       473           1  0.42917251 0.98392283
0.59765625       311
   micro avg  0.47448980 0.47448980 0.47448980       784   macro avg  0.67937499 0.56172886
0.42015165       784
weighted avg  0.73107499 0.47448980 0.38347341       784
Best parameters:
{'C': 10, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.5996093750000001
              precision    recall  f1-score   support
           0  0.94366197 0.14164905 0.24632353       473           1  0.43057504 0.98713826
0.59960938       311
   micro avg  0.47704082 0.47704082 0.47704082       784   macro avg  0.68711850 0.56439366
0.42296645       784
weighted avg  0.74012876 0.47704082 0.38646626       784
Best parameters:
{'C': 10, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.5974781765276431
```

```
          precision    recall  f1-score    support
       0   0.95312500 0.12896406 0.22718808       473          1  0.42777778 0.99035370
0.59747818       311
micro avg   0.47066327 0.47066327 0.47066327       784   macro avg  0.69045139 0.55965888
0.41233313       784
weighted avg  0.74472833 0.47066327 0.37407612       784
Best parameters:
{'C': 10, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.5926640926640927
          precision    recall  f1-score    support
       0   0.93220339 0.11627907 0.20676692       473          1  0.42344828 0.98713826
0.59266409       311
micro avg   0.46173469 0.46173469 0.46173469       784   macro avg  0.67782583 0.55170867
0.39971550       784
weighted avg  0.73038854 0.46173469 0.35984603       784
Best parameters:
{'C': 100, 'class_weight': {0: 0.7, 1: 1.5}, 'gamma': 'scale'}F1-score Task A
0.6337854500616523
          precision    recall  f1-score    support
       0   0.80985915 0.48625793 0.60766182       473          1  0.51400000 0.82636656
0.63378545       311
micro avg   0.62117347 0.62117347 0.62117347       784   macro avg  0.66192958 0.65631224
0.62072364       784
weighted avg  0.69249666 0.62117347 0.61802464       784
```

Sentiment feats alone

```
          precision    recall  f1-score    support
       0   0.63468635 0.36363636 0.46236559       473          1  0.41325536 0.68167203
0.51456311       311
micro avg   0.48979592 0.48979592 0.48979592       784   macro avg  0.52397085 0.52265419
0.48846435       784
weighted avg  0.54684829 0.48979592 0.48307149       784
```

MPQA Sentiment feats + BoW

MI

```
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.5987421383647799                    precision    recall  f1-score
support
          0  0.75666667 0.47991543 0.58732212        473          1  0.49173554 0.76527331
0.59874214        311
   micro avg  0.59311224 0.59311224 0.59311224        784    macro avg  0.62420110 0.62259437
0.59303213        784
weighted avg  0.65157281 0.59311224 0.59185226        784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6122905027932961                    precision    recall  f1-score
support
          0  0.81500000 0.34460888 0.48439822        473          1  0.46917808 0.88102894
0.61229050        311
   micro avg  0.55739796 0.55739796 0.55739796        784    macro avg  0.64208904 0.61281891
0.54834436        784
weighted avg  0.67781809 0.55739796 0.53513100        784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6160714285714285                    precision    recall  f1-score
support
          0  0.82412060 0.34672304 0.48809524        473          1  0.47179487 0.88745981
0.61607143        311
   micro avg  0.56122449 0.56122449 0.56122449        784    macro avg  0.64795774 0.61709143
0.55208333        784
weighted avg  0.68435874 0.56122449 0.53886130        784
```

```
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6155555555555555              precision    recall  f1-score
support
          0   0.82564103 0.34038055 0.48203593      473           1   0.47028862 0.89067524
0.61555556       311
   micro avg   0.55867347 0.55867347 0.55867347      784    macro avg   0.64796483 0.61552790
0.54879574       784
weighted avg   0.68467853 0.55867347 0.53500098      784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6145374449339207              precision    recall  f1-score
support
          0   0.82887701 0.32769556 0.46969697      473           1   0.46733668 0.89710611
0.61453744       311
   micro avg   0.55357143 0.55357143 0.55357143      784    macro avg   0.64810684 0.61240083
0.54211721       784
weighted avg   0.68545986 0.55357143 0.52715282      784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6106870229007634              precision    recall  f1-score
support
          0   0.82584270 0.31078224 0.45161290      473           1   0.46204620 0.90032154
0.61068702       311
   micro avg   0.54464286 0.54464286 0.54464286      784    macro avg   0.64394445 0.60555189
0.53114996       784
weighted avg   0.68153057 0.54464286 0.51471501      784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6352941176470589              precision    recall  f1-score
support
          0   0.79393939 0.55391121 0.65255293      473           1   0.53524229 0.78135048
0.63529412       311
   micro avg   0.64413265 0.64413265 0.64413265      784    macro avg   0.66459084 0.66763084
0.64392352       784
weighted avg   0.69131848 0.64413265 0.64570664      784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.639386189258312              precision    recall  f1-score
```

```
support
         0   0.80511182 0.53276956 0.64122137         473          1  0.53078556 0.80385852
0.63938619      311
   micro avg  0.64030612 0.64030612 0.64030612         784   macro avg  0.66794869 0.66831404
0.64030378      784
weighted avg  0.69629107 0.64030612 0.64049339         784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.645
          precision   recall  f1-score    support
         0   0.82033898 0.51162791 0.63020833         473          1  0.52760736 0.82958199
0.64500000      311
   micro avg  0.63775510 0.63775510 0.63775510         784   macro avg  0.67397317 0.67060495
0.63760417      784
weighted avg  0.70421713 0.63775510 0.63607595         784
```

Chi2

```
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6114352392065344                 precision    recall  f1-score
support
         0   0.79411765 0.39957717 0.53164557         473          1  0.47985348 0.84244373
0.61143524      311
   micro avg  0.57525510 0.57525510 0.57525510         784   macro avg  0.63698556 0.62101045
0.57154040      784
weighted avg  0.66945418 0.57525510 0.56329683         784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6084425036390102                 precision    recall  f1-score
support
         0   0.75000000 0.64693446 0.69466515         473          1  0.55585106 0.67202572
0.60844250      311
   micro avg  0.65688776 0.65688776 0.65688776         784   macro avg  0.65292553 0.65948009
0.65155383      784
weighted avg  0.67298429 0.65688776 0.66046204         784
Best parameters:
```

```
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5892857142857142                 precision    recall  f1-score
support
          0   0.73286052 0.65539112 0.69196429       473          1  0.54847645 0.63665595
0.58928571       311
    micro avg  0.64795918 0.64795918 0.64795918       784   macro avg  0.64066849 0.64602353
0.64062500       784
weighted avg   0.65971837 0.64795918 0.65123337       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5991058122205664                 precision    recall  f1-score
support
          0   0.74056604 0.66384778 0.70011148       473          1  0.55833333 0.64630225
0.59910581       311
    micro avg  0.65688776 0.65688776 0.65688776       784   macro avg  0.64944969 0.65507502
0.64960865       784
weighted avg   0.66827730 0.65688776 0.66004418       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6240928882438316                 precision    recall  f1-score
support
          0   0.76354680 0.65539112 0.70534699       473          1  0.56878307 0.69131833
0.62409289       311
    micro avg  0.66964286 0.66964286 0.66964286       784   macro avg  0.66616493 0.67335472
0.66471994       784
weighted avg   0.68628721 0.66964286 0.67311481       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6195965417867435                 precision    recall  f1-score
support
          0   0.76059850 0.64482030 0.69794050       473          1  0.56135770 0.69131833
0.61959654       311
    micro avg  0.66326531 0.66326531 0.66326531       784   macro avg  0.66097810 0.66806931
0.65876852       784
weighted avg   0.68156293 0.66326531 0.66686273       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6218978102189782                 precision    recall  f1-score
support
```

```
        0  0.76097561 0.65961945 0.70668177        473         1  0.56951872 0.68488746
0.62189781        311
   micro avg  0.66964286 0.66964286 0.66964286        784   macro avg  0.66524716 0.67225346
0.66428979        784
weighted avg  0.68502779 0.66964286 0.67304936        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6440677966101694              precision    recall  f1-score
support
        0  0.80487805 0.55813953 0.65917603        473         1  0.54166667 0.79421222
0.64406780        311
   micro avg  0.65178571 0.65178571 0.65178571        784   macro avg  0.67327236 0.67617588
0.65162191        784
weighted avg  0.70046639 0.65178571 0.65318284        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.644918444165621              precision    recall  f1-score
support
        0  0.81879195 0.51585624 0.63294423        473         1  0.52880658 0.82636656
0.64491844        311
   micro avg  0.63903061 0.63903061 0.63903061        784   macro avg  0.67379927 0.67111140
0.63893134        784
weighted avg  0.70375949 0.63903061 0.63769420        784
```

CoreNLP Sentiment feats + BOW

MI

```
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5388127853881278              precision    recall  f1-score
```

```
support
         0  0.69406393 0.64270613 0.66739846       473         1  0.51156069 0.56913183
0.53881279      311
   micro avg  0.61352041 0.61352041 0.61352041       784   macro avg  0.60281231 0.60591898
0.60310562      784
weighted avg  0.62166787 0.61352041 0.61639062       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5680119581464873               precision    recall  f1-score
support
         0  0.71596244 0.64482030 0.67853170       473         1  0.53072626 0.61093248
0.56801196      311
   micro avg  0.63137755 0.63137755 0.63137755       784   macro avg  0.62334435 0.62787639
0.62327183      784
weighted avg  0.64248227 0.63137755 0.63469032       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5727272727272729               precision    recall  f1-score
support
         0  0.71954023 0.66173362 0.68942731       473         1  0.54154728 0.60771704
0.57272727      311
   micro avg  0.64030612 0.64030612 0.64030612       784   macro avg  0.63054375 0.63472533
0.63107729      784
weighted avg  0.64893333 0.64030612 0.64313431       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6156111929307806               precision    recall  f1-score
support
         0  0.75480769 0.66384778 0.70641170       473         1  0.56793478 0.67202572
0.61561119      311
   micro avg  0.66709184 0.66709184 0.66709184       784   macro avg  0.66137124 0.66793675
0.66101145      784
weighted avg  0.68067826 0.66709184 0.67039262       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6056971514242879               precision    recall  f1-score
support
         0  0.74532710 0.67441860 0.70810211       473         1  0.56741573 0.64951768
0.60569715      311
```

```
   micro avg  0.66454082 0.66454082 0.66454082       784   macro avg  0.65637142 0.66196814
0.65689963       784
weighted avg  0.67475257 0.66454082 0.66747973       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6217008797653958               precision    recall  f1-score
support
          0  0.76029056 0.66384778 0.70880361       473          1  0.57142857 0.68167203
0.62170088       311
   micro avg  0.67091837 0.67091837 0.67091837       784   macro avg  0.66585956 0.67275990
0.66525225       784
weighted avg  0.68537209 0.67091837 0.67425138       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6133333333333333               precision    recall  f1-score
support
          0  0.75238095 0.66807611 0.70772676       473          1  0.56868132 0.66559486
0.61333333       311
   micro avg  0.66709184 0.66709184 0.66709184       784   macro avg  0.66053114 0.66683548
0.66053005       784
weighted avg  0.67951031 0.66709184 0.67028243       784
F1-score Task A 0.6105263157894737               precision    recall  f1-score
support
          0  0.74883721 0.68076110 0.71317829       473          1  0.57344633 0.65273312
0.61052632       311
   micro avg  0.66964286 0.66964286 0.66964286       784   macro avg  0.66114177 0.66674711
0.66185231       784
weighted avg  0.67926251 0.66964286 0.67245793       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6240713224368498               precision    recall  f1-score
support
          0  0.76066351 0.67864693 0.71731844       473          1  0.58011050 0.67524116
0.62407132       311
   micro avg  0.67729592 0.67729592 0.67729592       784   macro avg  0.67038700 0.67694405
0.67069488       784
weighted avg  0.68904108 0.67729592 0.68032883       784
```

Chi2

```
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5799457994579946           precision    recall  f1-score
support
         0   0.72829132 0.54968288 0.62650602       473        1  0.50117096 0.68810289
0.57994580       311
   micro avg   0.60459184 0.60459184 0.60459184       784   macro avg   0.61473114 0.61889288
0.60322591       784
weighted avg   0.63819638 0.60459184 0.60803634       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5900151285930408           precision    recall  f1-score
support
         0   0.73271889 0.67230444 0.70121279       473        1  0.55714286 0.62700965
0.59001513       311
   micro avg   0.65433673 0.65433673 0.65433673       784   macro avg   0.64493088 0.64965704
0.64561396       784
weighted avg   0.66307075 0.65433673 0.65710249       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6184012066365008           precision    recall  f1-score
support
         0   0.75462963 0.68921776 0.72044199       473        1  0.58238636 0.65916399
0.61840121       311
   micro avg   0.67729592 0.67729592 0.67729592       784   macro avg   0.66850800 0.67419087
0.66942160       784
weighted avg   0.68630354 0.67729592 0.67996408       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5988023952095808           precision    recall  f1-score
support
         0   0.74004684 0.66807611 0.70222222       473        1  0.56022409 0.64308682
0.59880240       311
   micro avg   0.65816327 0.65816327 0.65816327       784   macro avg   0.65013546 0.65558146
```

```
           0.65051231       784
weighted avg  0.66871409 0.65816327 0.66119727       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6133333333333333            precision    recall  f1-score
support
         0   0.75238095 0.66807611 0.70772676      473        1  0.56868132 0.66559486
0.61333333       311
   micro avg  0.66709184 0.66709184 0.66709184      784   macro avg  0.66053114 0.66683548
0.66053005       784
weighted avg  0.67951031 0.66709184 0.67028243      784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6332842415316642            precision    recall  f1-score
support
         0   0.76923077 0.67653277 0.71991001      473        1  0.58423913 0.69131833
0.63328424       311
   micro avg  0.68239796 0.68239796 0.68239796      784   macro avg  0.67673495 0.68392555
0.67659713       784
weighted avg  0.69584761 0.68239796 0.68554698      784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6117647058823529            precision    recall  f1-score
support
         0   0.75180723 0.65961945 0.70270270      473        1  0.56368564 0.66881029
0.61176471       311
   micro avg  0.66326531 0.66326531 0.66326531      784   macro avg  0.65774643 0.66421487
0.65723370       784
weighted avg  0.67718246 0.66326531 0.66662908      784
F1-score Task A 0.6172106824925816            precision    recall  f1-score
support
         0   0.75534442 0.67230444 0.71140940      473        1  0.57300275 0.66881029
0.61721068       311
   micro avg  0.67091837 0.67091837 0.67091837      784   macro avg  0.66417359 0.67055736
0.66431004       784
weighted avg  0.68301246 0.67091837 0.67404230      784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6140089418777943            precision    recall  f1-score
```

```
support

         0  0.75235849 0.67441860 0.71125975       473          1  0.57222222 0.66237942
0.61400894       311

   micro avg  0.66964286 0.66964286 0.66964286       784   macro avg  0.66229036 0.66839901
0.66263435       784

weighted avg  0.68090137 0.66964286 0.67268195       784
```

Twitter Sentiment feats + BOW

Mutual Information

```
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.5710186513629842              precision    recall  f1-score
support

         0  0.71859296 0.60465116 0.65671642       473          1  0.51554404 0.63987138
0.57101865       311

   micro avg  0.61862245 0.61862245 0.61862245       784   macro avg  0.61706850 0.62226127
0.61386753       784

weighted avg  0.63804677 0.61862245 0.62272151       784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.5918653576437587              precision    recall  f1-score
support

         0  0.73821990 0.59619450 0.65964912       473          1  0.52487562 0.67845659
0.59186536       311

   micro avg  0.62882653 0.62882653 0.62882653       784   macro avg  0.63154776 0.63732555
0.62575724       784

weighted avg  0.65358971 0.62882653 0.63276041       784
Best parameters:
{'C': 10, 'gamma': 'scale'}
```

```
F1-score Task A 0.5963431786216595                precision    recall  f1-score
support
          0   0.74218750 0.60253700 0.66511085        473          1  0.53000000 0.68167203
0.59634318        311
   micro avg  0.63392857 0.63392857 0.63392857        784   macro avg  0.63609375 0.64210451
0.63072702        784
weighted avg  0.65801618 0.63392857 0.63783184        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6134800550206327                precision    recall  f1-score
support
          0   0.76086957 0.59196617 0.66587396        473          1  0.53605769 0.71704180
0.61348006        311
   micro avg  0.64158163 0.64158163 0.64158163        784   macro avg  0.64846363 0.65450399
0.63967701        784
weighted avg  0.67169037 0.64158163 0.64509015        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6253443526170799                precision    recall  f1-score
support
          0   0.77235772 0.60253700 0.67695962        473          1  0.54698795 0.72990354
0.62534435        311
   micro avg  0.65306122 0.65306122 0.65306122        784   macro avg  0.65967284 0.66622027
0.65115199        784
weighted avg  0.68295721 0.65306122 0.65648469        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6233062330623307                precision    recall  f1-score
support
          0   0.77310924 0.58350951 0.66506024        473          1  0.53864169 0.73954984
0.62330623        311
   micro avg  0.64540816 0.64540816 0.64540816        784   macro avg  0.65587546 0.66152968
0.64418324        784
weighted avg  0.68009979 0.64540816 0.64849711        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6228187919463087                precision    recall  f1-score
support
          0   0.77428571 0.57293869 0.65856622        473          1  0.53456221 0.74598071
```

```
                              0.62281879        311
    micro avg  0.64158163 0.64158163 0.64158163        784    macro avg  0.65442396 0.65945970
0.64069251        784
weighted avg  0.67919131 0.64158163 0.64438580        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6251655629139073                precision    recall  f1-score
support
            0  0.77941176 0.56025370 0.65190652        473            1  0.53153153 0.75884244
0.62516556        311
    micro avg  0.63903061 0.63903061 0.63903061        784    macro avg  0.65547165 0.65954807
0.63853604        784
weighted avg  0.68108172 0.63903061 0.64129882        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6276041666666666                precision    recall  f1-score
support
            0  0.78593272 0.54334038 0.64250000        473            1  0.52735230 0.77491961
0.62760417        311
    micro avg  0.63520408 0.63520408 0.63520408        784    macro avg  0.65664251 0.65913000
0.63505208        784
weighted avg  0.68335809 0.63520408 0.63659107        784
```

Chi-squared

```
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6
          precision    recall  f1-score    support
        0  0.76140351 0.45877378 0.57255937        473            1  0.48697395 0.78135048
0.60000000        311
    micro avg  0.58673469 0.58673469 0.58673469        784    macro avg  0.62418873 0.62006213
0.58627968        784
weighted avg  0.65254178 0.58673469 0.58344462        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5842349304482226                precision    recall  f1-score
```

```
support
            0   0.72767857 0.68921776 0.70792617        473          1   0.56250000 0.60771704
0.58423493        311
    micro avg   0.65688776 0.65688776 0.65688776        784   macro avg   0.64508929 0.64846740
0.64608055        784
weighted avg   0.66215493 0.65688776 0.65885987        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6183431952662721            precision    recall  f1-score
support
            0   0.75656325 0.67019027 0.71076233        473          1   0.57260274 0.67202572
0.61834320        311
    micro avg   0.67091837 0.67091837 0.67091837        784   macro avg   0.66458299 0.67110800
0.66455276        784
weighted avg   0.68358912 0.67091837 0.67410117        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.623688155922039            precision    recall  f1-score
support
            0   0.75934579 0.68710359 0.72142064        473          1   0.58426966 0.66881029
0.62368816        311
    micro avg   0.67984694 0.67984694 0.67984694        784   macro avg   0.67180773 0.67795694
0.67255440        784
weighted avg   0.68989595 0.67984694 0.68265176        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.624813153961136            precision    recall  f1-score
support
            0   0.76056338 0.68498943 0.72080089        473          1   0.58379888 0.67202572
0.62481315        311
    micro avg   0.67984694 0.67984694 0.67984694        784   macro avg   0.67218113 0.67850758
0.67280702        784
weighted avg   0.69044379 0.67984694 0.68272412        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6340740740740741            precision    recall  f1-score
support
            0   0.76904762 0.68287526 0.72340426        473          1   0.58791209 0.68810289
0.63407407        311
```

```
   micro avg  0.68494898 0.68494898 0.68494898      784   macro avg  0.67847985 0.68548908
0.67873916      784
weighted avg  0.69719411 0.68494898 0.68796843      784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.609720176730486              precision    recall  f1-score
support
         0  0.75000000 0.65961945 0.70191226      473         1  0.56250000 0.66559486
0.60972018      311
   micro avg  0.66198980 0.66198980 0.66198980      784   macro avg  0.65625000 0.66260715
0.65581622      784
weighted avg  0.67562181 0.66198980 0.66534117      784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6244477172312224              precision    recall  f1-score
support
         0  0.76201923 0.67019027 0.71316085      473         1  0.57608696 0.68167203
0.62444772      311
   micro avg  0.67474490 0.67474490 0.67474490      784   macro avg  0.66905309 0.67593115
0.66880429      784
weighted avg  0.68826293 0.67474490 0.67796980      784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6311688311688313              precision    recall  f1-score
support
         0  0.79076923 0.54334038 0.64411028      473         1  0.52941176 0.78135048
0.63116883      311
   micro avg  0.63775510 0.63775510 0.63775510      784   macro avg  0.66009050 0.66234543
0.63763955      784
weighted avg  0.68709299 0.63775510 0.63897662      784
```

Bow alone

Mutual Information

```
Best parameters:
{'C': 0.01, 'gamma': 'scale'}
F1-score Task A 0.6146788990825688              precision    recall  f1-score
support
          0   0.80717489 0.38054968 0.51724138       473          1  0.47771836 0.86173633
0.61467890       311
   micro avg   0.57142857 0.57142857 0.57142857       784    macro avg  0.64244662 0.62114301
0.56596014       784
weighted avg   0.67648486 0.57142857 0.55589325       784
Best parameters:
{'C': 0.1, 'gamma': 'scale'}
F1-score Task A 0.6074766355140188              precision    recall  f1-score
support
          0   0.78661088 0.39746300 0.52808989       473          1  0.47706422 0.83601286
0.60747664       311
   micro avg   0.57142857 0.57142857 0.57142857       784    macro avg  0.63183755 0.61673793
0.56778326       784
weighted avg   0.66381877 0.57142857 0.55958131       784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6084507042253521              precision    recall  f1-score
support
          0   0.75324675 0.61310782 0.67599068       473          1  0.54135338 0.69453376
0.60845070       311
   micro avg   0.64540816 0.64540816 0.64540816       784    macro avg  0.64730007 0.65382079
0.64222069       784
weighted avg   0.66919211 0.64540816 0.64919867       784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6022727272727273              precision    recall  f1-score
support
          0   0.74680307 0.61733615 0.67592593       473          1  0.53944020 0.68167203
0.60227273       311
   micro avg   0.64285714 0.64285714 0.64285714       784    macro avg  0.64312164 0.64950409
0.63909933       784
weighted avg   0.66454561 0.64285714 0.64670890       784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.5991316931982634              precision    recall  f1-score
```

```
support
          0  0.74257426 0.63424947 0.68415051         473          1  0.54473684 0.66559486
0.59913169         311
   micro avg  0.64668367 0.64668367 0.64668367         784    macro avg  0.64365555 0.64992216
0.64164110         784
weighted avg  0.66409538 0.64668367 0.65042494         784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6080691642651297               precision    recall  f1-score
support
          0  0.75062344 0.63636364 0.68878719         473          1  0.55091384 0.67845659
0.60806916         311
   micro avg  0.65306122 0.65306122 0.65306122         784    macro avg  0.65076864 0.65741011
0.64842817         784
weighted avg  0.67140190 0.65306122 0.65676766         784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6242038216560509               precision    recall  f1-score
support
          0  0.78709677 0.51585624 0.62324393         473          1  0.51687764 0.78778135
0.62420382         311
   micro avg  0.62372449 0.62372449 0.62372449         784    macro avg  0.65198721 0.65181879
0.62372388         784
weighted avg  0.67990525 0.62372449 0.62362471         784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6221662468513853               precision    recall  f1-score
support
          0  0.78737542 0.50105708 0.61240310         473          1  0.51138716 0.79421222
0.62216625         311
   micro avg  0.61734694 0.61734694 0.61734694         784    macro avg  0.64938129 0.64763465
0.61728467         784
weighted avg  0.67789538 0.61734694 0.61627598         784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6262376237623762               precision    recall  f1-score
support
          0  0.79790941 0.48414376 0.60263158         473          1  0.50905433 0.81350482
0.62623762         311
```

```
    micro avg  0.61479592 0.61479592 0.61479592       784   macro avg  0.65348187 0.64882429
0.61443460       784
weighted avg  0.68332531 0.61479592 0.61199571       784
```

Chi2

```
Best parameters:
{'C': 0.1, 'gamma': 'scale'}
F1-score Task A 0.616822429906542              precision    recall  f1-score
support
          0  0.80334728 0.40591966 0.53932584       473         1  0.48440367 0.84887460
0.61682243       311
    micro avg  0.58163265 0.58163265 0.58163265       784   macro avg  0.64387548 0.62739713
0.57807414       784
weighted avg  0.67682756 0.58163265 0.57006747       784
Best parameters:
{'C': 0.1, 'gamma': 'scale'}
F1-score Task A 0.6134259259259259             precision    recall  f1-score
support
          0  0.80086580 0.39112051 0.52556818       473         1  0.47920434 0.85209003
0.61342593       311
    micro avg  0.57397959 0.57397959 0.57397959       784   macro avg  0.64003507 0.62160527
0.56949705       784
weighted avg  0.67326795 0.57397959 0.56041991       784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6005830903790088             precision    recall  f1-score
support
          0  0.74327628 0.64270613 0.68934240       473         1  0.54933333 0.66237942
0.60058309       311
    micro avg  0.65051020 0.65051020 0.65051020       784   macro avg  0.64630481 0.65254278
0.64496275       784
weighted avg  0.66634228 0.65051020 0.65413303       784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6051873198847262             precision    recall  f1-score
support
```

```
           0   0.74812968 0.63424947 0.68649886        473         1   0.54830287 0.67524116
0.60518732        311
   micro avg   0.65051020 0.65051020 0.65051020        784    macro avg   0.64821627 0.65474531
0.64584309        784
weighted avg   0.66886165 0.65051020 0.65424390        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.5979971387696709                 precision    recall   f1-score
support
           0   0.74242424 0.62156448 0.67663982        473         1   0.53865979 0.67202572
0.59799714        311
   micro avg   0.64158163 0.64158163 0.64158163        784    macro avg   0.64054202 0.64679510
0.63731848        784
weighted avg   0.66159421 0.64158163 0.64544355        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6189111747851003                 precision    recall   f1-score
support
           0   0.76070529 0.63847780 0.69425287        473         1   0.55813953 0.69453376
0.61891117        311
   micro avg   0.66071429 0.66071429 0.66071429        784    macro avg   0.65942241 0.66650578
0.65658202        784
weighted avg   0.68035076 0.66071429 0.66436605        784
Best parameters:
{'C': 10, 'gamma': 'scale'}
F1-score Task A 0.6221590909090909                 precision    recall   f1-score
support
           0   0.76470588 0.63213531 0.69212963        473         1   0.55725191 0.70418006
0.62215909        311
   micro avg   0.66071429 0.66071429 0.66071429        784    macro avg   0.66097890 0.66815769
0.65714436        784
weighted avg   0.68241228 0.66071429 0.66437346        784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.628498727735369                 precision    recall   f1-score
support
           0   0.79288026 0.51797040 0.62659847        473         1   0.52000000 0.79421222
0.62849873        311
   micro avg   0.62755102 0.62755102 0.62755102        784    macro avg   0.65644013 0.65609131
```

```
        0.62754860      784
weighted avg  0.68463312 0.62755102 0.62735227       784
Best parameters:
{'C': 1, 'gamma': 'scale'}
F1-score Task A 0.6236024844720497             precision   recall  f1-score
support
         0  0.79310345 0.48625793 0.60288336       473          1  0.50809717 0.80707395
0.62360248      311
   micro avg  0.61352041 0.61352041 0.61352041       784   macro avg  0.65060031 0.64666594
0.61324292      784
weighted avg  0.68004611 0.61352041 0.61110230       784
```

Combined

Chi2

```
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5663716814159292             precision   recall  f1-score
support
         0  0.71462830 0.63002114 0.66966292       473          1  0.52316076 0.61736334
0.56637168      311
   micro avg  0.62500000 0.62500000 0.62500000       784   macro avg  0.61889453 0.62369224
0.61801730      784
weighted avg  0.63867625 0.62500000 0.62868897       784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5753012048192772             precision   recall  f1-score
support
         0  0.72157773 0.65750529 0.68805310       473          1  0.54107649 0.61414791
0.57530120      311
   micro avg  0.64030612 0.64030612 0.64030612       784   macro avg  0.63132711 0.63582660
0.63167715      784
weighted avg  0.64997583 0.64030612 0.64332626       784
```

```
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5954198473282442                    precision    recall  f1-score
support
            0   0.73636364 0.68498943 0.70974808        473          1  0.56686047 0.62700965
0.59541985        311
    micro avg  0.66198980 0.66198980 0.66198980        784   macro avg  0.65161205 0.65599954
0.65258397        784
weighted avg   0.66912450 0.66198980 0.66439594        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.600609756097561                    precision    recall  f1-score
support
            0   0.74031891 0.68710359 0.71271930        473          1  0.57101449 0.63344051
0.60060976        311
    micro avg  0.66581633 0.66581633 0.66581633        784   macro avg  0.65566670 0.66027205
0.65666453        784
weighted avg   0.67315861 0.66581633 0.66824727        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6255639097744361                    precision    recall  f1-score
support
            0   0.76046512 0.69133192 0.72425249        473          1  0.58757062 0.66881029
0.62556391        311
    micro avg  0.68239796 0.68239796 0.68239796        784   macro avg  0.67401787 0.68007111
0.67490820        784
weighted avg   0.69188069 0.68239796 0.68510434        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6216216216216217                    precision    recall  f1-score
support
            0   0.75757576 0.68710359 0.72062084        473          1  0.58309859 0.66559486
0.62162162        311
    micro avg  0.67857143 0.67857143 0.67857143        784   macro avg  0.67033717 0.67634922
0.67112123        784
weighted avg   0.68836351 0.67857143 0.68134947        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6077844311377245                    precision    recall  f1-score
```

```
support

         0  0.74707260 0.67441860 0.70888889        473           1  0.56862745 0.65273312
0.60778443        311

    micro avg  0.66581633 0.66581633 0.66581633        784    macro avg  0.65785003 0.66357586
0.65833666        784

weighted avg  0.67628632 0.66581633 0.66878240        784
```

Mutual Information

```
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5601217656012177               precision    recall  f1-score
support

         0  0.71004566 0.65750529 0.68276619        473           1  0.53179191 0.59163987
0.56012177        311

    micro avg  0.63137755 0.63137755 0.63137755        784    macro avg  0.62091878 0.62457258
0.62144398        784

weighted avg  0.63933531 0.63137755 0.63411515        784

Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.5753424657534247               precision    recall  f1-score
support

         0  0.72146119 0.66807611 0.69374314        473           1  0.54624277 0.60771704
0.57534247        311

    micro avg  0.64413265 0.64413265 0.64413265        784    macro avg  0.63385198 0.63789658
0.63454280        784

weighted avg  0.65195490 0.64413265 0.64677553        784

Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.581039755351682                precision    recall  f1-score
support

         0  0.72562358 0.67653277 0.70021882        473           1  0.55393586 0.61093248
0.58103976        311

    micro avg  0.65051020 0.65051020 0.65051020        784    macro avg  0.63977972 0.64373262
0.64062929        784

weighted avg  0.65751787 0.65051020 0.65294243        784

Best parameters:
{'C': 100, 'gamma': 'scale'}
```

```
F1-score Task A 0.6066066066066067                 precision    recall  f1-score
support
          0   0.74592075 0.67653277 0.70953437        473          1  0.56901408 0.64951768
0.60660661        311
   micro avg   0.66581633 0.66581633 0.66581633        784   macro avg  0.65746742 0.66302523
0.65807049        784
weighted avg   0.67574476 0.66581633 0.66870461        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6059701492537314                 precision    recall  f1-score
support
          0   0.74588235 0.67019027 0.70601336        473          1  0.56545961 0.65273312
0.60597015        311
   micro avg   0.66326531 0.66326531 0.66326531        784   macro avg  0.65567098 0.66146170
0.65599176        784
weighted avg   0.67431160 0.66326531 0.66632785        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.608955223880597                  precision    recall  f1-score
support
          0   0.74823529 0.67230444 0.70824053        473          1  0.56824513 0.65594855
0.60895522        311
   micro avg   0.66581633 0.66581633 0.66581633        784   macro avg  0.65824021 0.66412650
0.65859788        784
weighted avg   0.67683613 0.66581633 0.66885567        784
Best parameters:
{'C': 100, 'gamma': 'scale'}
F1-score Task A 0.6063348416289592                 precision    recall  f1-score
support
          0   0.74537037 0.68076110 0.71160221        473          1  0.57102273 0.64630225
0.60633484        311
   micro avg   0.66709184 0.66709184 0.66709184        784   macro avg  0.65819655 0.66353168
0.65896853        784
weighted avg   0.67620951 0.66709184 0.66984436        784
```