| | | | | |
|---|---|---|---|---|
| Classifier | KNeighborsClassifier | | | |
| Parameters | n_neighbors=1 | | | |
| | result1 | result2 | result3 | mean result |
| fit_time | 9.39785838 | 9.36794519 | 9.08584237 | 9.28388198 |
| score_time | 376.3758667 | 386.180898 | 387.8513379 | 383.4693675 |
| test_f1 | 0.14647887 | 0.13855422 | 0.11299435 | 0.132675813 |
| test_precision | 0.14606742 | 0.1483871 | 0.11235955 | 0.13560469 |
| test_recall | 0.14689266 | 0.1299435 | 0.11363636 | 0.130157507 |

| | | | | |
|---|---|---|---|---|
| Classifier | KNeighborsClassifier | | | |
| Parameters | n_neighbors=3 | | | |
| | result1 | result2 | result3 | mean result |
| fit_time | 8.37858987 | 11.26188612 | 13.15082645 | 10.93043415 |
| score_time | 399.0834658 | 398.775702 | 427.8648906 | 408.5746861 |
| test_f1 | 0.10232558 | 0.04784689 | 0.09433962 | 0.08150403 |
| test_precision | 0.28947368 | 0.15625 | 0.27777778 | 0.241167153 |
| test_recall | 0.06214689 | 0.02824859 | 0.05681818 | 0.04907122 |

| | | | | |
|---|---|---|---|---|
| Classifier | KNeighborsClassifier | | | |
| Parameters | n_neighbors=5 | | | |
| | result1 | result2 | result3 | mean result |
| fit_time | 7.71137547 | 9.49564648 | 8.13723755 | 8.4480865 |
| score_time | 363.3123326 | 375.3063574 | 367.0173855 | 368.5453585 |
| test_f1 | 0.0212766 | 0.03174603 | 0.06349206 | 0.03883823 |
| test_precision | 0.18181818 | 0.25 | 0.46153846 | 0.297785547 |
| test_recall | 0.01129944 | 0.01694915 | 0.03409091 | 0.020779833 |

SVC classifier parameters that returned a mean zero f1

| C | kernel | degree | gamma | coef0 |
|---|---|---|---|---|
| 1.0 | poly | 3 | N/A | |
| 1.0 | rbf | N/A | 1/(X.shape[1]*X.std()) | |
| 1.0 | sigmoid | N/A | 1/(X.shape[1]*X.std()) | |
| 1.0 | N/A | N/A | 1/(X.shape[1]*X.std()) | |
| 2.0 | poly | 2 | auto_deprecated | |
| 2.0 | rbf | N/A | auto | |
| 0.001 | rbf | N/A | auto | |
| 0.001 | sigmoid | N/A | auto | |
| 0.001 | linear | N/A | auto | |
| 0.001 | poly | N/A | auto | 2.0 |

There are other combiations of parameters too for which I get 0 mean f1 score

Best (in terms of mean F1) SVC result I got

| | | | | | |
|---|---|---|---|---|---|
| Parameters | C=4.0 | kernel= poly | coef0= 5.0 | degree = 10 | gamma=1/(X.shape[1]*X.std()) |
| | result1 | result2 | result3 | mean result | |

| | | | | |
|---|---|---|---|---|
| fit_time | 151.0265942 | 155.3023119 | 148.9125176 | 151.7471412 |
| score_time | 203.0234728 | 184.6456382 | 187.7555344 | 191.8082151 |
| test_f1 | 0.60666667 | 0.64705882 | 0.56428571 | 0.60600373 |
| test_precision | 0.7398374 | 0.76744186 | 0.75961538 | 0.755631547 |
| test_recall | 0.51412429 | 0.55932203 | 0.44886364 | 0.507436653 |

**Following are few of the parameter combinations for which I get mean f1 score that is pretty close to the best mean f1 score for SVC that I got**

SVC result I got

Parameters C=1.0 kernel=linear

| | result1 | result2 | result3 | mean result |
|---|---|---|---|---|
| fit_time | 133.3950155 | 135.5227351 | 138.564328 | 135.8273595 |
| score_time | 142.56097698 | 144.0579634 | 141.2632918 | 142.6274107 |
| test_f1 | 0.61356932 | 0.63929619 | 0.55238095 | 0.60174882 |
| test_precision | 0.64197531 | 0.66463415 | 0.62589928 | 0.64416958 |
| test_recall | 0.58757062 | 0.61581921 | 0.49431818 | 0.56590267 |

SVC result I got

Parameters C=6.0 kernel=linear

| | result1 | result2 | result3 | mean result |
|---|---|---|---|---|
| fit_time | 128.5522246 | 119.8145516 | 123.0104375 | 123.7924046 |
| score_time | 124.2734077 | 126.8425722 | 124.1000669 | 125.0720156 |
| test_f1 | 0.61356932 | 0.63929619 | 0.55238095 | 0.60174882 |
| test_precision | 0.64197531 | 0.66463415 | 0.62589928 | 0.64416958 |
| test_recall | 0.58757062 | 0.61581921 | 0.49431818 | 0.56590267 |

SVC result I got

Parameters C=24.0 kernel= linear

| | result1 | result2 | result3 | mean result |
|---|---|---|---|---|
| fit_time | 100.814924 | 95.04479575 | 101.7917507 | 99.21715681 |
| score_time | 103.2995279 | 107.6790073 | 102.3971307 | 104.4585553 |
| test_f1 | 0.61356932 | 0.63929619 | 0.55238095 | 0.60174882 |
| test_precision | 0.64197531 | 0.66463415 | 0.62589928 | 0.64416958 |
| test_recall | 0.58757062 | 0.61581921 | 0.49431818 | 0.56590267 |

For following two the mean f1 was low

SVC result I got

| Parameters | C=9.0 | kernel=sigmoid | gamma = auto | |
|---|---|---|---|---|
| | result1 | result2 | result3 | mean result |
| fit_time | 67.32889318 | 64.58364773 | 69.73005486 | 67.21419859 |
| score_time | 91.4089098 | 91.17516136 | 92.11472178 | 91.56626431 |
| test_f1 | 0.05737705 | 0.08264463 | 0.0390625 | 0.059694727 |
| test_precision | 0.10447761 | 0.15384615 | 0.0625 | 0.106941253 |
| test_recall | 0.03954802 | 0.05649718 | 0.02840909 | 0.041484763 |

SVC result I got

| Parameters | C=24.0 | kernel=sigmoid | gamma = 1/(X.shape[1]*X.std()) | |
|---|---|---|---|---|
| | result1 | result2 | result3 | mean result |
| fit_time | 58.13665271 | 50.70039797 | 58.37118316 | 55.73607795 |
| score_time | 68.79400039 | 72.67211223 | 69.48878908 | 70.31830057 |
| test_f1 | 0.10847458 | 0.13017751 | 0.11728395 | 0.118645347 |
| test_precision | 0.13559322 | 0.13664596 | 0.12837838 | 0.133539187 |
| test_recall | 0.09039548 | 0.12429379 | 0.10795455 | 0.10754794 |

| Parameters | C=1000000.0 | kernel= poly | coef0= 5.0 | degree = 10 | gamma=1/(X.shape[1]*X.std()) |
|---|---|---|---|---|---|
| | result1 | result2 | result3 | mean result | |
| fit_time | 141.22076011 | 140.10095072 | 150.51217675 | 143.9446292 | |
| score_time | 194.65442944 | 190.67964292 | 201.01421809 | 195.4494302 | |
| test_f1 | 0.60666667 | 0.64705882 | 0.56428571 | 0.60600373 | |
| test_precision | 0.7398374 | 0.76744186 | 0.75961538 | 0.755631547 | |
| test_recall | 0.51412429 | 0.55932203 | 0.44886364 | 0.507436653 | |