| Classifier | KNeighborsClass | ifier | Williams Data Va | lues |
|----------------|-----------------|------------------|-------------------|-------------------|
| Parameters | n_neighbors=1 | (Ran Experiments | s Using Google co | lab TPU Instance) |
| | result1 | result2 | result3 | mean result |
| fit_time | 6.06402087 | 5.67916107 | 5.64043283 | 5.794538257 |
| score_time | 1300.199133 | 1303.416287 | 1307.997038 | 1303.87082 |
| test_f1 | 0.09090909 | 0.19047619 | 0 | 0.093795093 |
| test_precision | 0.25 | 0.5 | 0 | 0.25 |
| test_recall | 0.0555556 | 0.11764706 | 0 | 0.057734207 |
| | | | | |

Classifier KNeighborsClassifier

Parameters n_neighbors=3

| | result1 | result2 | result3 | mean result |
|----------------|-------------|-------------|-------------|-------------|
| fit_time | 5.86270404 | 5.31152177 | 5.19494772 | 5.456391177 |
| score_time | 1194.353204 | 1202.647008 | 1204.945647 | 1200.648619 |
| test_f1 | 0 | 0 | 0 | 0 |
| test_precision | 0 | 0 | 0 | 0 |
| test_recall | 0 | 0 | 0 | 0 |

Classifier KNeighborsClassifier

Parameters n_neighbors=5

| | result1 | result2 | result3 | mean result |
|----------------|-------------|-------------|-------------|-------------|
| fit_time | 7.86713886 | 6.8788631 | 7.47372675 | 7.406576237 |
| score_time | 1396.368086 | 1405.566775 | 1415.448088 | 1405.794316 |
| test_f1 | 0 | 0 | 0 | 0 |
| test_precision | 0 | 0 | 0 | 0 |
| test_recall | 0 | 0 | 0 | 0 |

Williams Data Values

SVC classifier parameters that returned a mean zero f1

| С | kernel | degree | gamma |
|----|--------|--------|-------|
| ?? | linear | N/A | N/A |
| ?? | poly | ?? | N/A |
| ?? | rbf | N/A | ?? |
| ?? | ?? | ?? | ?? |
| | | | |

(more rows and parameters)

Mean Zero F1 Experiments

1)

| Parameters | C=1.0 | kernel='poly' | degree=2 | |
|------------|-------------|---------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 19.10914159 | 19.2784183 | 17.63888741 | 18.67548243 |
| score_time | 18.82551169 | 22.2592504 | 18.07864356 | 19.72113522 |
| test_f1 | 0 | 0 | 0 | 0 |

| test_precision | 0 | 0 | 0 | 0 |
|----------------|---|---|---|---|
| test_recall | 0 | 0 | 0 | 0 |

2)

| Parameters | C=1.0 | kernel='rbf' | gamma=auto | |
|----------------|-------------|--------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 15.92170119 | 16.04218578 | 14.84162569 | 15.60183755 |
| score_time | 16.7007165 | 17.27276039 | 16.00723243 | 16.66023644 |
| test_f1 | 0 | 0 | 0 | 0 |
| test_precision | 0 | 0 | 0 | 0 |
| test_recall | 0 | 0 | 0 | 0 |

3)

| Parameters | C=1.0 | kernel='poly' | degree=3 | |
|----------------|-------------|---------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 16.14837718 | 15.70916271 | 14.50830007 | 15.45527999 |
| score_time | 16.78037453 | 16.79958701 | 16.68966985 | 16.7565438 |
| test_f1 | 0 | 0 | 0 | 0 |
| test_precision | 0 | 0 | 0 | 0 |
| test_recall | 0 | 0 | 0 | 0 |

4)

| Parameters | C=2.0 | kernel='rbf' | gamma=auto | |
|----------------|-------------|--------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 16.67299891 | 16.0696702 | 14.9951508 | 15.91260664 |
| score_time | 17.07680011 | 17.38732052 | 15.96775913 | 16.81062659 |
| test_f1 | 0 | 0 | 0 | 0 |
| test_precision | 0 | 0 | 0 | 0 |
| test_recall | 0 | 0 | 0 | 0 |

5)

| Parameters | C=1.0 | kernel='sigmoid' | | |
|----------------|-------------|------------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 11.42982483 | 10.95731378 | 10.08294177 | 10.82336013 |
| score_time | 9.21473312 | 8.77171898 | 8.58572865 | 8.857393583 |
| test_f1 | 0 | 0 | 0 | 0 |
| test_precision | 0 | 0 | 0 | 0 |
| test_recall | 0 | 0 | 0 | 0 |

6)

| Parameters | C=1.0 | kernel='poly' | degree=10 | |
|----------------|-----------|---------------|------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 6.781389 | 6.55163026 | 6.41285896 | 6.581959407 |
| score_time | 6.2658627 | 6.09849191 | 6.01519418 | 6.126516263 |
| test_f1 | 0 | 0 | 0 | 0 |
| test_precision | 0 | 0 | 0 | 0 |
| test_recall | 0 | 0 | 0 | 0 |

7)

| Parameters | C=1.0 | kernel='sigmoid' | gamma=auto | |
|----------------|-------------|------------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 11.25011683 | 10.62036872 | 10.04153943 | 10.63734166 |
| score_time | 9.11555719 | 8.75820446 | 8.58050728 | 8.818089643 |
| test_f1 | 0 | 0 | 0 | 0 |
| test_precision | 0 | 0 | 0 | 0 |
| test_recall | 0 | 0 | 0 | 0 |

Mean F1 that are not Zeros

8)

| Parameters | C=1.0 | kernel='linear' | | |
|----------------|-------------|-----------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 18.52157784 | 18.53539729 | 17.9386282 | 18.33186778 |
| score_time | 19.87878847 | 18.20570922 | 18.52535653 | 18.86995141 |
| test_f1 | 0.6 | 0.5 | 0.46153846 | 0.52051282 |
| test_precision | 0.75 | 0.63636364 | 0.66666667 | 0.684343437 |
| test_recall | 0.5 | 0.41176471 | 0.35294118 | 0.42156863 |

9)

| Parameters | C=2.0 | kernel='linear' | | |
|----------------|-------------|-----------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 18.26684785 | 18.29944921 | 18.24866319 | 18.27165342 |
| score_time | 18.76454592 | 18.22269726 | 18.82728267 | 18.60484195 |
| test_f1 | 0.6 | 0.5 | 0.46153846 | 0.52051282 |
| test_precision | 0.75 | 0.63636364 | 0.66666667 | 0.684343437 |
| test_recall | 0.5 | 0.41176471 | 0.35294118 | 0.42156863 |

(Selected as the best mean F1)

| Parameters | C=9.0 | kernel='linear' | | |
|----------------|-------------|-----------------|-------------|-------------|
| | result1 | result2 | result3 | mean result |
| fit_time | 18.01341796 | 18.74155927 | 17.86256337 | 18.20584687 |
| score_time | 19.1835959 | 17.96345329 | 18.73141789 | 18.62615569 |
| test_f1 | 0.6 | 0.5 | 0.46153846 | 0.52051282 |
| test_precision | 0.75 | 0.63636364 | 0.66666667 | 0.684343437 |
| test_recall | 0.5 | 0.41176471 | 0.35294118 | 0.42156863 |