**Radial basis**

Resumen del modelo SVM (construido con ksvm):

Support Vector Machine object of class "ksvm"

SV type: C-svc (classification)

parameter : cost C = 1

Gaussian Radial Basis kernel function.

Hyperparameter : sigma = 0.00269299818731879

Number of Support Vectors : 2435

Objective Function Value : -83.2623 -43.7438 -71.576 -31.0363 -57.1493 -77.9405 -31.7338 -60.4548 -13.3336 -65.2028 -78.6972 -50.2961 -91.8128 -85.1497 -46.9913 -129.2922 -18.6835 -89.2618 -108.6825 -75.1896 -60.0559 -75.5159 -41.3182 -40.4515 -47.3234 -87.2281 -71.1836 -55.9035 -96.6764 -21.9468 -69.4732 -30.0855 -140.847 -47.1922 -26.6257 -57.1805 -61.5416 -100.9487 -35.8876 -28.549 -37.8459 -26.9529 -51.0923 -23.1755 -18.7145

Training error : 0.008778

Probability model included.

Tiempo transcurrido: 43.67 segs

Rattle marca de tiempo: 2017-06-08 18:08:40 Katerin

======================================================================

Matriz de error para el modelo SVM en ZipDataTestCod.csv (cuentas):

Predicho

Real cero cinco cuatro dos nueve ocho seis siete tres uno

cero 354 0 1 3 0 1 0 0 0 0

cinco 3 148 1 1 3 1 0 0 3 0

cuatro 0 1 189 4 3 0 1 1 0 1

dos 2 0 5 183 0 4 0 1 3 0

nueve 0 1 4 0 169 2 0 1 0 0

ocho 4 2 0 1 3 154 0 0 2 0

seis 4 2 2 4 0 1 157 0 0 0

siete 0 0 5 1 2 1 0 138 0 0

tres 2 10 0 4 0 4 0 1 145 0

uno 0 0 5 1 1 0 3 0 0 254

Overall error: 6%, Averaged class error: 7%

Precisiones positivas para cada número:

cero = 98%

cinco = 93%

cuatro = 95%

dos = 92%

nueve = 95%

ocho = 93%

seis = 92%

siete = 94%

tres = 87%

uno = 96%

**Polynomial**

Resumen del modelo SVM (construido con ksvm):

Support Vector Machine object of class "ksvm"

SV type: C-svc (classification)

parameter : cost C = 1

Polynomial kernel function.

Hyperparameters : degree = 1 scale = 1 offset = 1

Number of Support Vectors : 1412

Objective Function Value : -0.8983 -0.2079 -0.5009 -0.1026 -0.3329 -0.7583 -0.0955 -0.2953 -0.0623 -0.9368 -0.8369 -0.3936 -1.2569 -1.3923 -0.333 -2.7229 -0.0993 -2.0257 -1.6717 -0.6116 -0.4684 -1.1153 -0.1569 -2.6625 -0.2711 -1.175 -0.8027 -0.3212 -1.0284 -0.1389 -0.4865 -0.1178 -4.2018 -0.3244 -0.1816 -0.3264 -0.4716 -1.3064 -0.5379 -0.1092 -0.1502 -0.1939 -0.3007 -0.1847 -0.1055

Training error : 0.000137

Probability model included.

Tiempo transcurrido: 22.02 segs

Rattle marca de tiempo: 2017-06-08 18:11:07 Katerin

======================================================================

Matriz de error para el modelo SVM en ZipDataTrainCod.csv (cuentas):

Predicho

Real cero cinco cuatro dos nueve ocho seis siete tres uno

cero 351 0 2 3 0 1 2 0 0 0

cinco 5 141 2 0 2 3 0 0 7 0

cuatro 2 2 181 5 4 0 2 2 0 2

dos 3 5 3 179 0 3 1 1 3 0

nueve 0 1 2 0 171 0 0 3 0 0

ocho 7 4 0 4 3 144 0 0 4 0

seis 0 2 4 2 0 1 161 0 0 0

siete 0 0 6 1 5 1 0 134 0 0

tres 2 9 0 2 0 4 0 1 148 0

uno 0 0 5 0 1 1 3 0 0 254

Overall error: 7%, Averaged class error: 8%

Precisiones positivas para cada número:

cero = 98%

cinco = 88%

cuatro = 91%

dos = 90%

nueve = 97%

ocho = 87%

seis = 95%

siete = 91%

tres = 89%

uno = 96%

**Linear**

Resumen del modelo SVM (construido con ksvm):

Support Vector Machine object of class "ksvm"

SV type: C-svc (classification)

parameter : cost C = 1

Linear (vanilla) kernel function.

Number of Support Vectors : 1412

Objective Function Value : -0.8983 -0.2079 -0.5009 -0.1026 -0.3329 -0.7583 -0.0955 -0.2953 -0.0623 -0.9368 -0.8369 -0.3936 -1.2569 -1.3923 -0.333 -2.7229 -0.0993 -2.0257 -1.6717 -0.6116 -0.4684 -1.1153 -0.1569 -2.6625 -0.2711 -1.175 -0.8027 -0.3212 -1.0284 -0.1389 -0.4865 -0.1178 -4.2018 -0.3244 -0.1816 -0.3264 -0.4716 -1.3064 -0.5379 -0.1092 -0.1502 -0.1939 -0.3007 -0.1847 -0.1055

Training error : 0.000137

Probability model included.

Tiempo transcurrido: 15.50 segs

Rattle marca de tiempo: 2017-06-08 18:12:58 Katerin

======================================================================

Matriz de error para el modelo SVM en ZipDataTrainCod.csv (cuentas):

Predicho

Real cero cinco cuatro dos nueve ocho seis siete tres uno

cero 351 0 2 3 0 1 2 0 0 0

cinco 5 141 2 0 2 3 0 0 7 0

cuatro 2 2 181 5 4 0 2 2 0 2

dos 3 5 3 179 0 3 1 1 3 0

nueve 0 1 2 0 171 0 0 3 0 0

ocho 7 4 0 4 3 144 0 0 4 0

seis 0 2 4 2 0 1 161 0 0 0

siete 0 0 6 1 5 1 0 134 0 0

tres 2 9 0 2 0 4 0 1 148 0

uno 0 0 5 0 1 1 3 0 0 254

Overall error: 7%, Averaged class error: 8%

Precisiones positivas para cada número:

cero = 98%

cinco = 89%

cuatro = 91%

dos = 90%

nueve = 97%

ocho = 87%

seis = 95%

siete = 91%

tres = 89%

uno = 96%

**Hyperbolic Tangent**

Resumen del modelo SVM (construido con ksvm):

Support Vector Machine object of class "ksvm"

SV type: C-svc (classification)

parameter : cost C = 1

Hyperbolic Tangent kernel function.

Hyperparameters : scale = 1 offset = 1

Number of Support Vectors : 5795

Objective Function Value : -20964.52 -2301.314 -11586.32 -1691.603 -5580.275 -16444.64 -859.6927 -10613.7 -516.2908 -3016.215 -3719.386 -4113.524 -2729.14 -9009.203 -2176.316 -5451.504 -3297.218 -7768.929 -15566.03 -3914.377 -3397.541 -4900.006 -1174.888 -7833.381 -4026.798 -5781.426 -18929.71 -2041.168 -3764.129 -6094.53 -5915.3 -1283.614 -19107.76 -4101.023 -1164.332 -3669.704 -2835.893 -4163.643 -3779.594 -1020.025 -1107.229 -3909.518 -2773.559 -2284.378 -1237.37

Training error : 0.665615

Probability model included.

Tiempo transcurrido: 1.04 mins

Rattle marca de tiempo: 2017-06-08 18:21:07 Katerin

======================================================================

Matriz de error para el modelo SVM en ZipDataTrainCod.csv (cuentas):

Predicho

Real cero cinco cuatro dos nueve ocho seis siete tres uno

cero 205 23 4 42 5 5 60 0 10 5

cinco 65 18 6 3 7 5 15 4 16 21

cuatro 6 1 47 9 66 4 7 22 1 37

dos 36 4 6 59 4 11 21 5 7 45

nueve 2 1 10 1 94 4 0 38 1 26

ocho 33 6 8 5 23 52 3 2 6 28

seis 18 6 3 25 1 8 59 0 1 49

siete 2 11 5 0 83 0 0 32 0 14

tres 52 15 5 14 14 10 1 7 32 16

uno 0 0 0 6 50 0 61 29 2 116

Overall error: 64%, Averaged class error: 67%

**Laplacian**

Resumen del modelo SVM (construido con ksvm):

Support Vector Machine object of class "ksvm"

SV type: C-svc (classification)

parameter : cost C = 1

Laplace kernel function.

Hyperparameter : sigma = 0.00269299818731879

Number of Support Vectors : 4681

Objective Function Value : -398.2894 -255.7372 -348.7531 -206.9034 -300.2899 -400.4543 -189.5767 -333.1558 -102.5626 -320.3317 -360.1957 -284.198 -382.3684 -390.0489 -255.5615 -493.8048 -130.6629 -370.0535 -508.5806 -357.0255 -295.9025 -358.0152 -254.4477 -190.8085 -261.8391 -373.1943 -367.7339 -262.6718 -402.883 -141.1299 -367.5744 -200.0944 -516.08 -273.7824 -157.8233 -292.6269 -274.3578 -404.4263 -177.087 -180.5084 -248.0486 -152.5445 -258.5937 -132.8476 -120.9632

Training error : 0.05157

Probability model included.

Tiempo transcurrido: 1.96 mins

Rattle marca de tiempo: 2017-06-08 18:24:25 Katerin

======================================================================

Matriz de error para el modelo SVM en ZipDataTrainCod.csv (cuentas):

Predicho

Real cero cinco cuatro dos nueve ocho seis siete tres uno

cero 349 0 2 2 1 1 4 0 0 0

cinco 6 136 3 0 5 1 0 1 8 0

cuatro 0 0 184 8 4 0 1 2 0 1

dos 5 3 7 167 0 9 2 1 4 0

nueve 0 1 4 0 165 3 0 3 0 1

ocho 6 3 2 3 5 134 0 0 13 0

seis 7 3 3 4 0 1 152 0 0 0

siete 0 0 9 1 4 1 0 132 0 0

tres 3 12 0 6 2 1 0 1 141 0

uno 0 1 6 0 1 0 5 0 0 251

Overall error: 10%, Averaged class error: 11%

**Bessel**

Resumen del modelo SVM (construido con ksvm):

Support Vector Machine object of class "ksvm"

SV type: C-svc (classification)

parameter : cost C = 1

Bessel kernel function.

Hyperparameter : sigma = 1 order = 1 degree = 1

Number of Support Vectors : 7039

Objective Function Value : -1202.419 -2390.11 -1373.035 -3010.871 -1904.863 -1814.464 -2203.428 -1624.105 -10234.29 -1131.117 -1013.506 -1324.638 -971.4841 -1259.421 -1099.902 -782.1427 -5439.714 -1353.602 -1521.132 -1213.775 -1236.972 -1490.983 -1215.845 -6540.129 -1725.426 -1249.843 -1539.795 -1390.161 -1131.833 -6822.302 -1775.265 -1289.846 -1516.82 -1754.08 -7735.708 -1098.94 -1250.661 -1118.872 -5743.907 -1368.835 -1224.041 -6950.147 -1317.37 -7024.744 -6118.571

Training error : 0.893567

Probability model included.

Tiempo transcurrido: 8.93 mins

Rattle marca de tiempo: 2017-06-08 18:55:23 Katerin

======================================================================

Matriz de error para el modelo SVM en ZipDataTrainCod.csv (cuentas):

Predicho

Real cero cinco cuatro dos nueve ocho seis siete tres uno

cero 53 0 1 2 28 2 19 2 10 242

cinco 20 0 2 5 7 2 7 5 3 109

cuatro 64 1 2 0 24 1 0 2 1 105

dos 39 2 3 3 7 0 4 2 4 134

nueve 62 0 0 0 6 0 1 1 0 107

ocho 42 1 0 3 15 0 2 1 0 102

seis 36 0 0 2 13 4 3 13 2 97

siete 41 0 0 0 18 2 7 1 0 78

tres 37 0 2 3 15 0 3 0 3 103

uno 140 0 0 0 50 0 0 1 1 72

Overall error: 93%, Averaged class error: 95%