Práctica 6: Support Vector Machines

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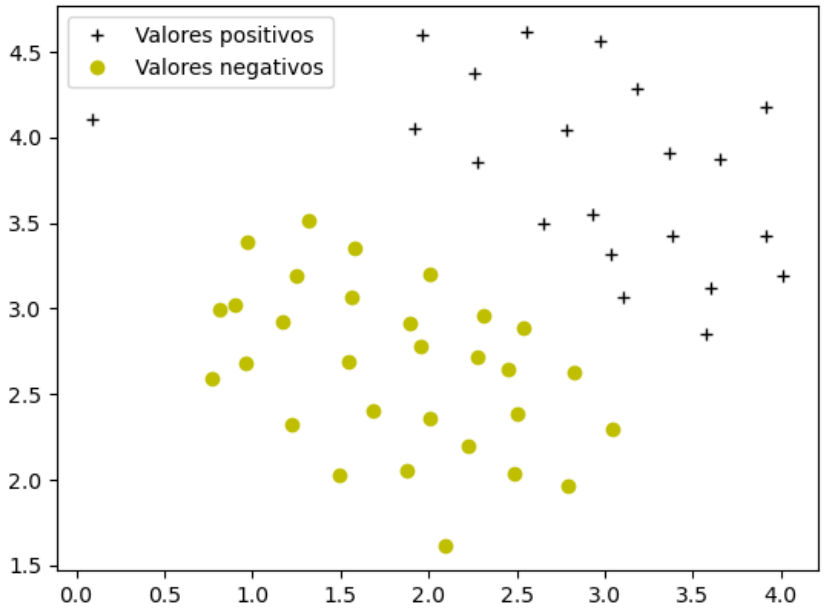
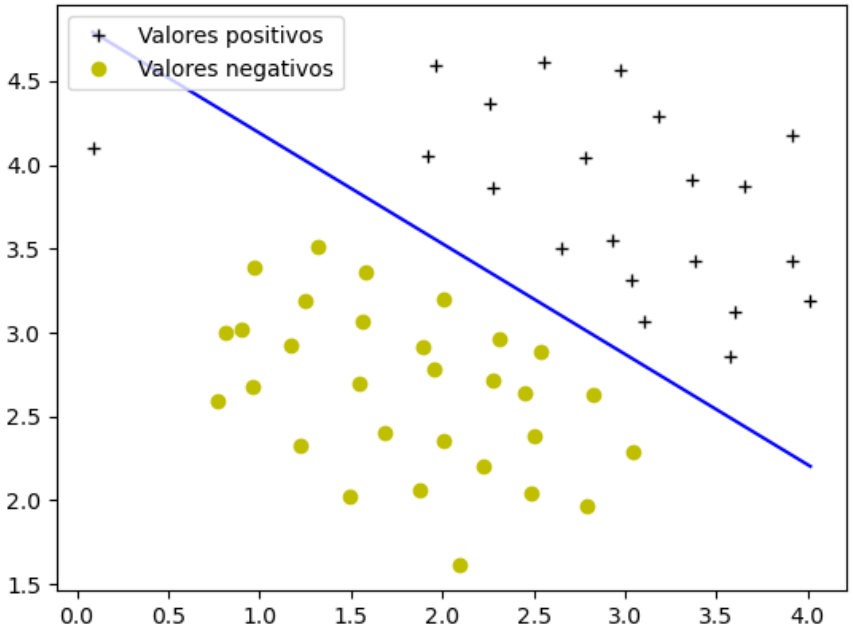
1.Support Vector Machines

1.1.Kernel lineal

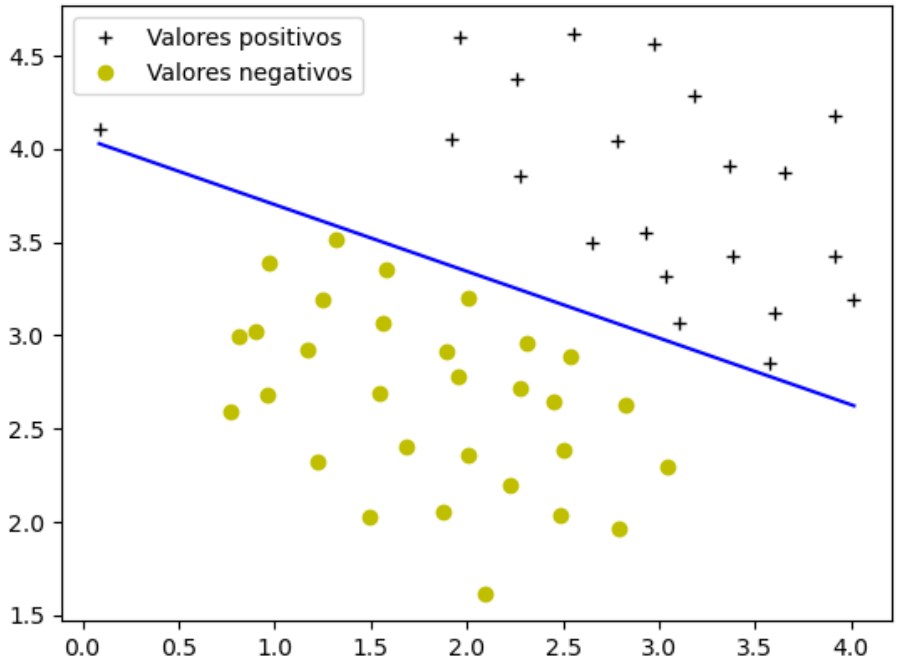
```
data1 = loadmat("ex6data1.mat")
X = data1['X']
y = data1['y']
Y_ravel = y.ravel()

print(X.shape)
plot_data(X, Y_ravel)

C = 1
model = svmLinearTrain(X, Y_ravel, C, 1e-3, -1)
visualizeBoundryLinear(X, Y_ravel, model)
C = 100
model = svmLinearTrain(X, Y_ravel, C, 1e-3, -1)
visualizeBoundryLinear(X, Y_ravel, model)
```



SVM con C = 1



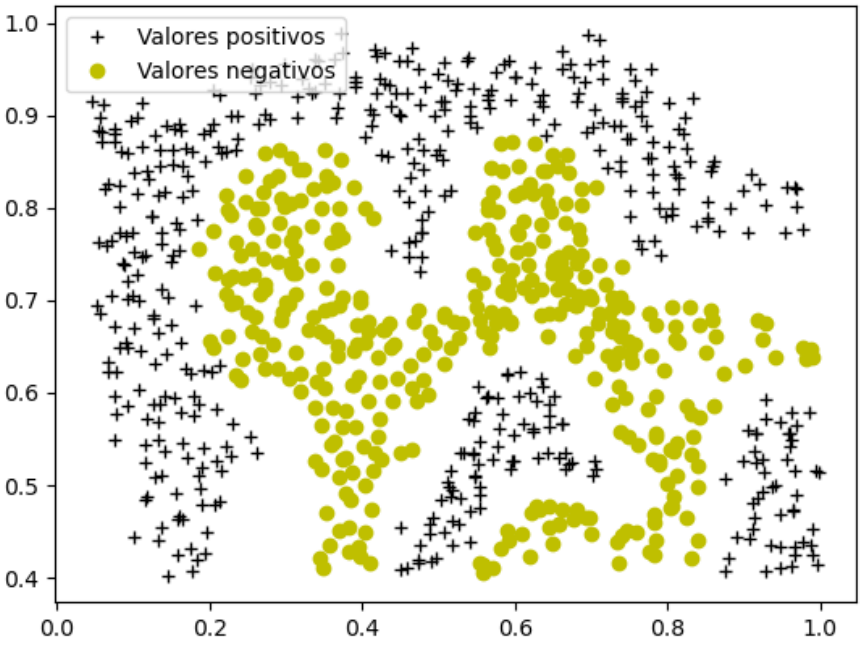
SVM con C = 100

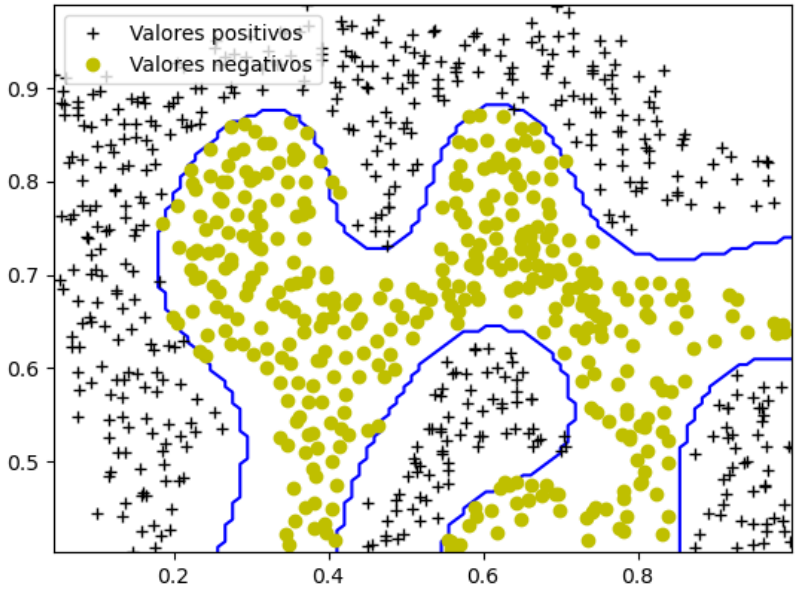


1.2.Kernel gaussiano

```
data2 = loadmat("ex6data2.mat")
X = data2['X']
y = data2['y']
Y_ravel = y.ravel()

plot_data(X, Y_ravel)
```

```
C = 1
sigma = 0.1
model = svmGaussianTrain(X, Y_ravel, C, 1e-3, 100, sigma)
visualizeBoundry(X, Y_ravel, model, sigma)
```





2.Detección de spam

```
email_contents = codecs.open('spam/0001.txt', 'r', encoding='utf-8', errors='ignore').read()
email_contents = preProcess(email_contents)
email_token_list = email2TokenList(email_contents)

vocab_dict = getVocabDict() # 1899 elementos
email_word_indices = tokenList2wordIndices(email_token_list, vocab_dict)
print(email_word_indices)

email_attributes = np.zeros((1899,), dtype=int)

for idx in email_word_indices:
    email_attributes[idx] = 1
```

```
(base) C:\Users\alvar\Documents\GitHub\AprendizajeAutomatico\Prácticas\Práctica 6>python practica6.py
[688, 531, 1689, 133, 1120, 1120, 1120, 1120, 1224, 425, 1699, 688, 1120, 1120, 1120, 1120, 227, 581, 309, 1860, 804, 1
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666, 531, 1521, 493, 1689, 1120, 133, 1120, 1120, 1120, 1120, 1120, 1373, 688, 1120, 1120, 1120, 1120, 227, 1095, 1120,
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(base) C:\Users\alvar\Documents\GitHub\AprendizajeAutomatico\Prácticas\Práctica 6>
```