DETECCIÓN DEL GRADO DE ACNÉ CON IMÁGENES

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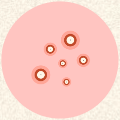

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01

Planteamiento del problema

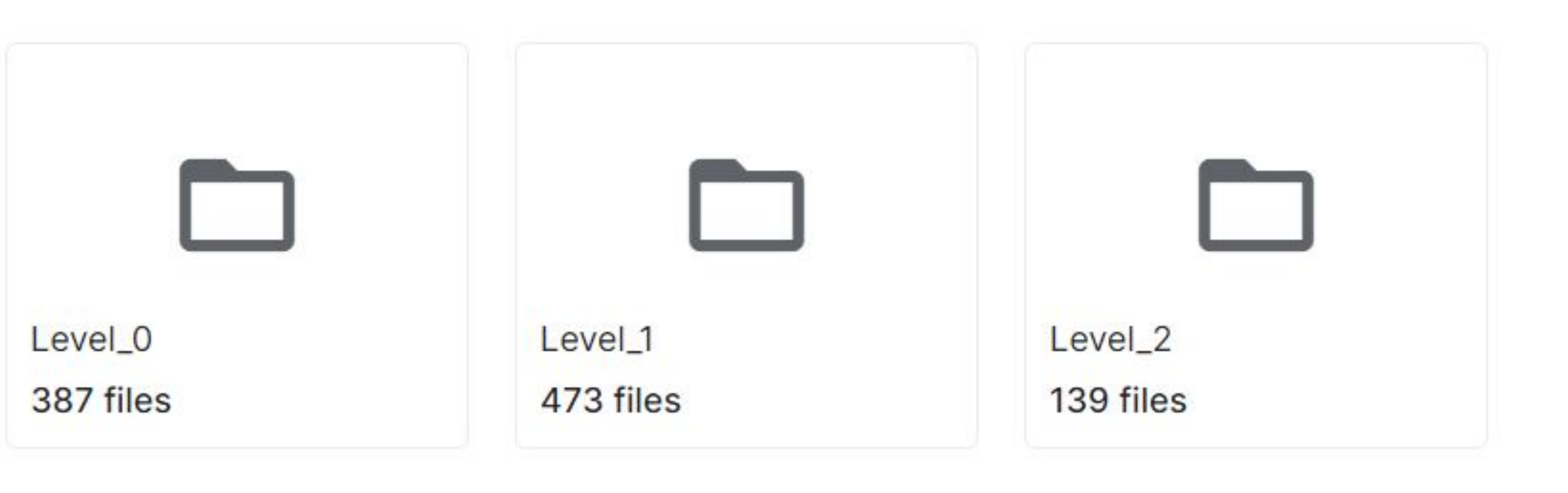
Planteamiento del problema

Detectar el grado de acne que presenta una persona por medio de imagenes

02

DATASET

Dataset



Level_0

387 files

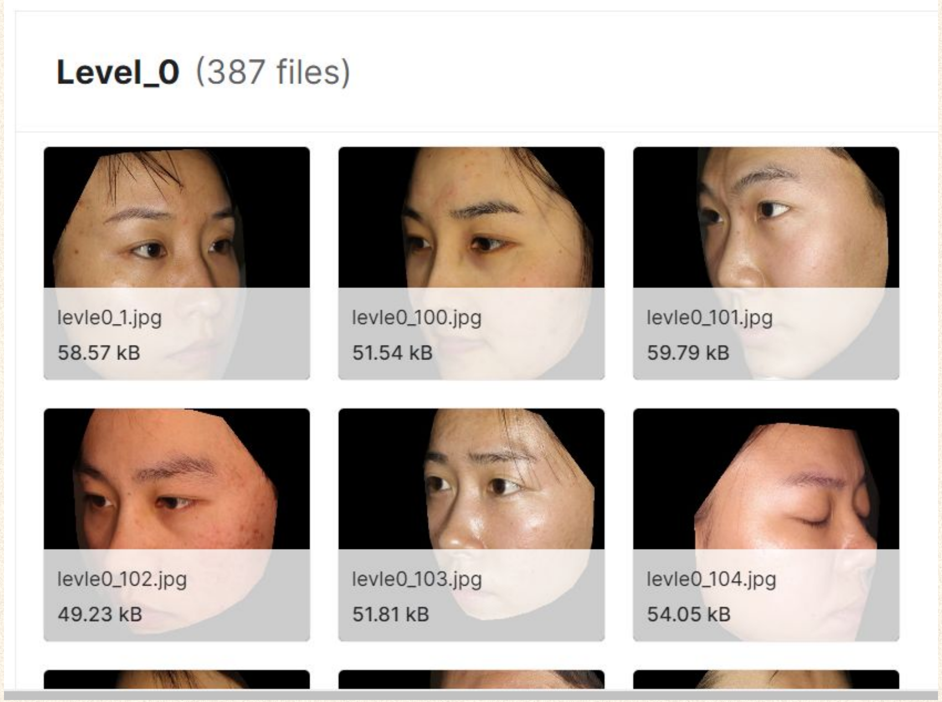
Level_1

473 files

Level_2

139 files

Level_0



Level_0 (387 files)

levle0_1.jpg
58.57 kB

levle0_100.jpg
51.54 kB

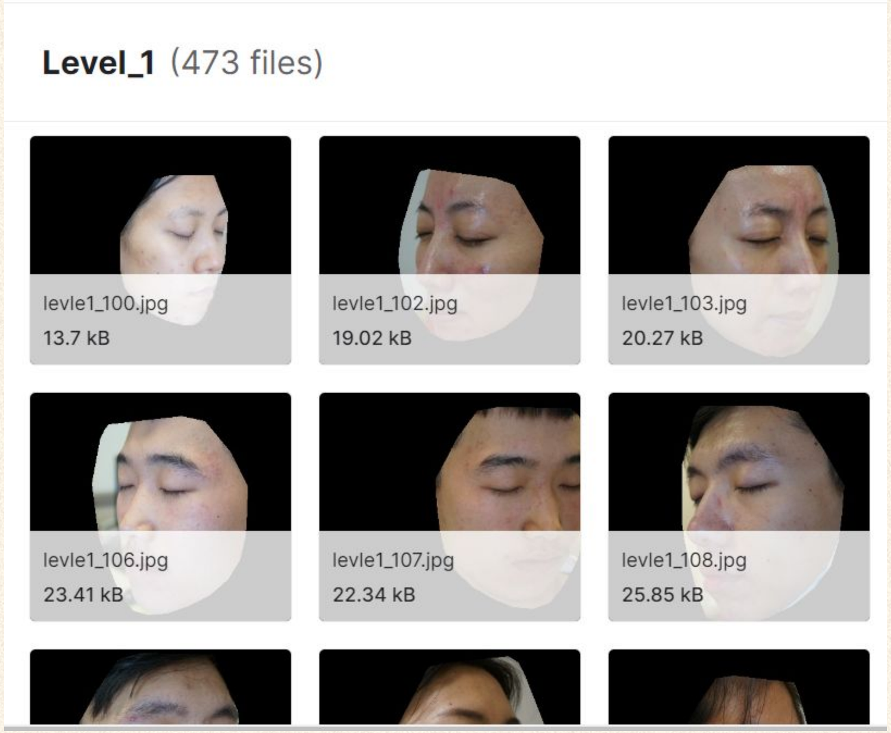
levle0_101.jpg
59.79 kB

levle0_102.jpg
49.23 kB

levle0_103.jpg
51.81 kB

levle0_104.jpg
54.05 kB

Level_1



Level_1 (473 files)

levle1_100.jpg
13.7 kB

levle1_102.jpg
19.02 kB

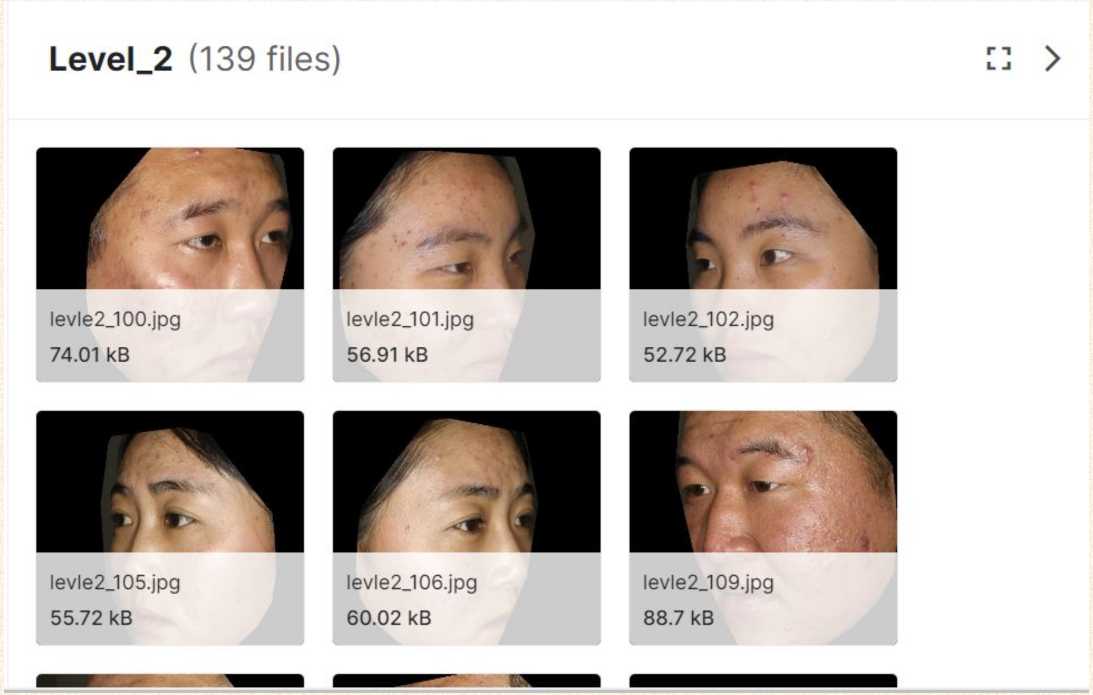
levle1_103.jpg
20.27 kB

levle1_106.jpg
23.41 kB

levle1_107.jpg
22.34 kB

levle1_108.jpg
25.85 kB

Level_2



Level_2 (139 files)

levle2_100.jpg
74.01 kB

levle2_101.jpg
56.91 kB

levle2_102.jpg
52.72 kB

levle2_105.jpg
55.72 kB

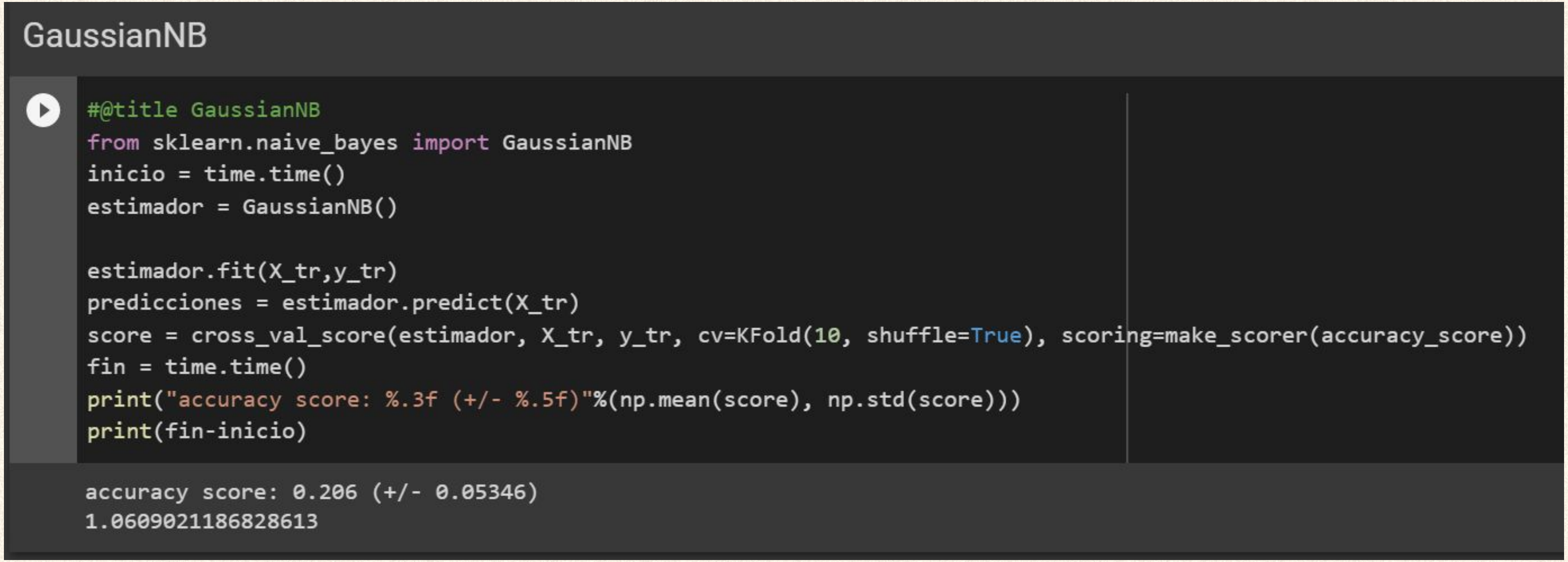
levle2_106.jpg
60.02 kB

levle2_109.jpg
88.7 kB

03

Modelos de clasificación

GaussianNB



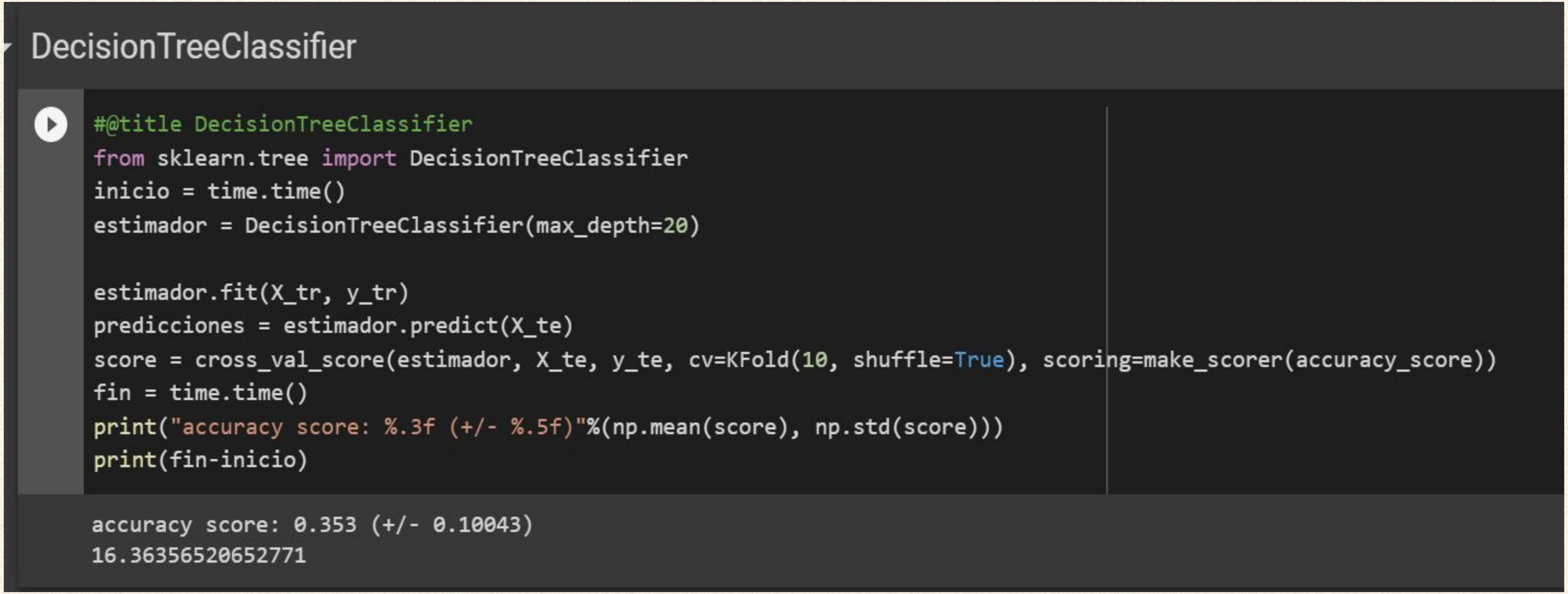
GaussianNB

```
#@title GaussianNB
from sklearn.naive_bayes import GaussianNB
inicio = time.time()
estimador = GaussianNB()

estimador.fit(X_tr,y_tr)
predicciones = estimador.predict(X_tr)
score = cross_val_score(estimador, X_tr, y_tr, cv=KFold(10, shuffle=True), scoring=make_scorer(accuracy_score))
fin = time.time()
print("accuracy score: %.3f (+/- %.5f)"%(np.mean(score), np.std(score)))
print(fin-inicio)
```

```
accuracy score: 0.206 (+/- 0.05346)
1.0609021186828613
```

Decision Tree Classifier



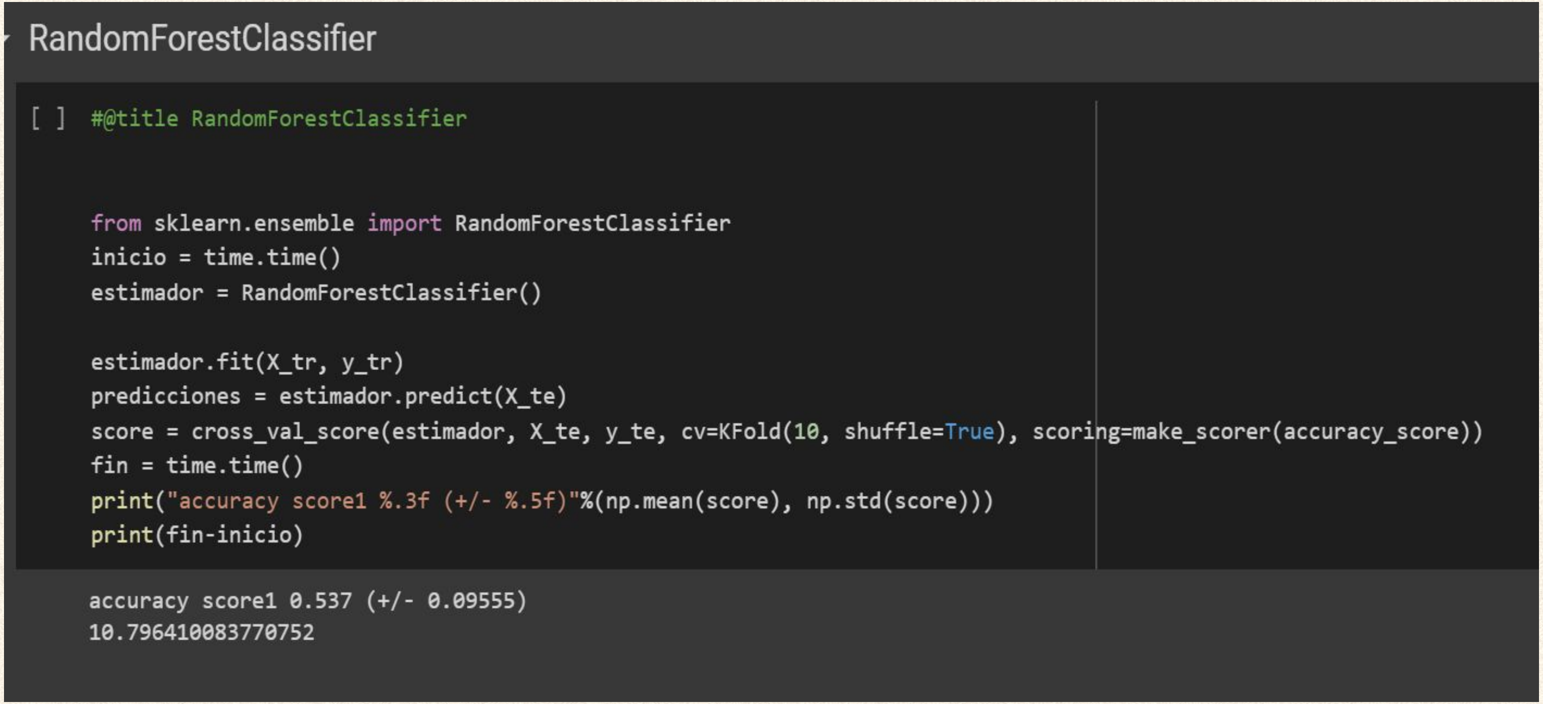
DecisionTreeClassifier

```
#@title DecisionTreeClassifier
from sklearn.tree import DecisionTreeClassifier
inicio = time.time()
estimador = DecisionTreeClassifier(max_depth=20)

estimador.fit(X_tr, y_tr)
predicciones = estimador.predict(X_te)
score = cross_val_score(estimador, X_te, y_te, cv=KFold(10, shuffle=True), scoring=make_scorer(accuracy_score))
fin = time.time()
print("accuracy score: %.3f (+/- %.5f)"%(np.mean(score), np.std(score)))
print(fin-inicio)
```

```
accuracy score: 0.353 (+/- 0.10043)
16.36356520652771
```

Random Forest Classifier



RandomForestClassifier

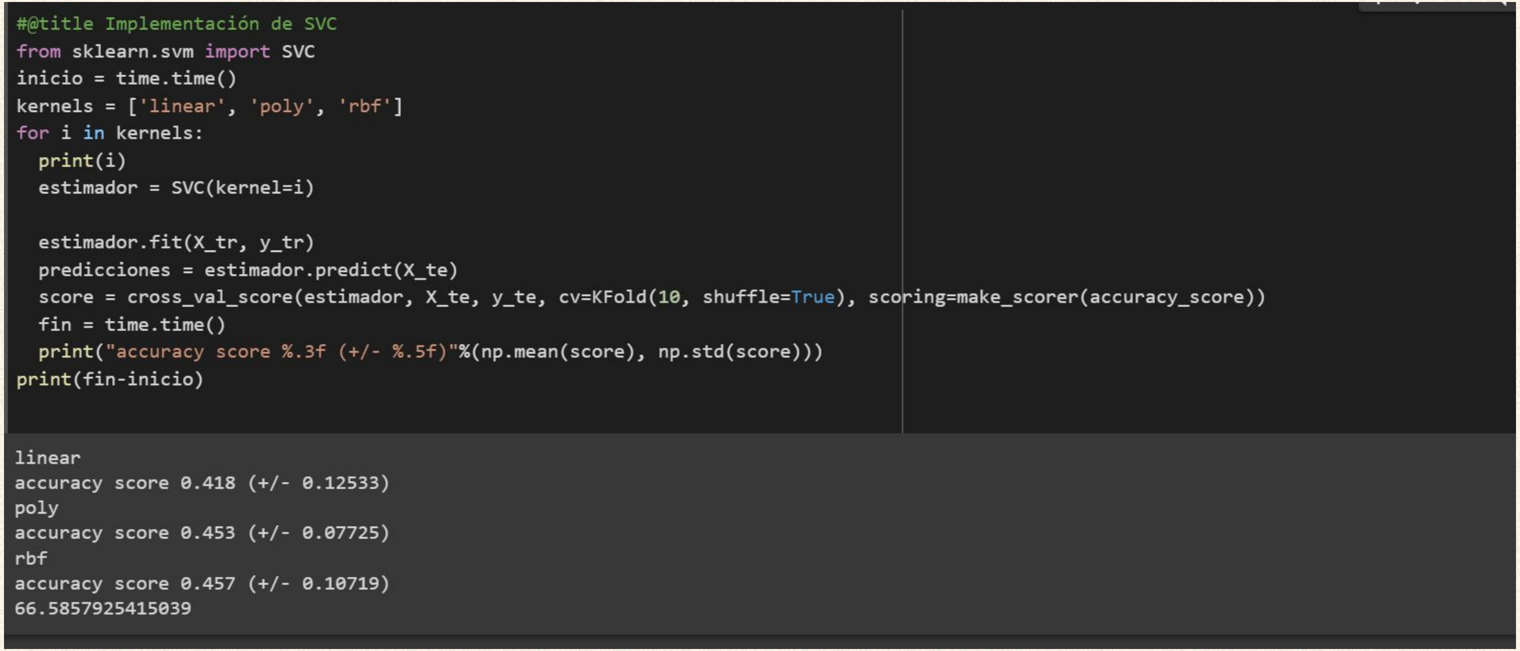
```
[ ]  #@title RandomForestClassifier


     from sklearn.ensemble import RandomForestClassifier
     inicio = time.time()
     estimador = RandomForestClassifier()

     estimador.fit(X_tr, y_tr)
     predicciones = estimador.predict(X_te)
     score = cross_val_score(estimador, X_te, y_te, cv=KFold(10, shuffle=True), scoring=make_scorer(accuracy_score))
     fin = time.time()
     print("accuracy score1 %.3f (+/- %.5f)"%(np.mean(score), np.std(score)))
     print(fin-inicio)
```

```
accuracy score1 0.537 (+/- 0.09555)
10.796410083770752
```

Implementación de SVC



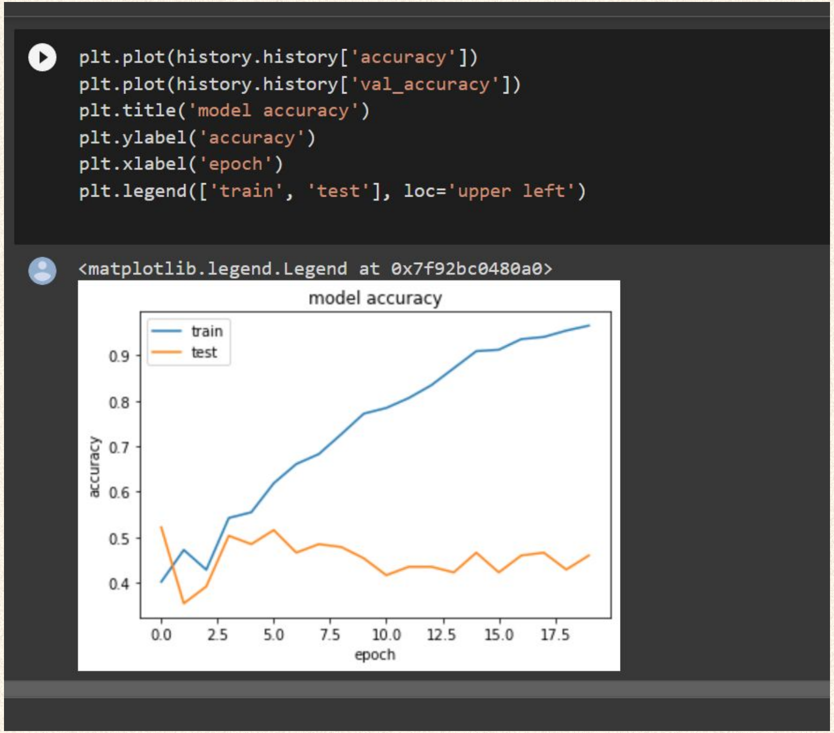
```
#@title Implementación de SVC
from sklearn.svm import SVC
inicio = time.time()
kernels = ['linear', 'poly', 'rbf']
for i in kernels:
  print(i)
  estimador = SVC(kernel=i)

  estimador.fit(X_tr, y_tr)
  predicciones = estimador.predict(X_te)
  score = cross_val_score(estimador, X_te, y_te, cv=KFold(10, shuffle=True), scoring=make_scorer(accuracy_score))
  fin = time.time()
  print("accuracy score %.3f (+/- %.5f)"%(np.mean(score), np.std(score)))
print(fin-inicio)
```

```
linear
accuracy score 0.418 (+/- 0.12533)
poly
accuracy score 0.453 (+/- 0.07725)
rbf
accuracy score 0.457 (+/- 0.10719)
66.5857925415039
```

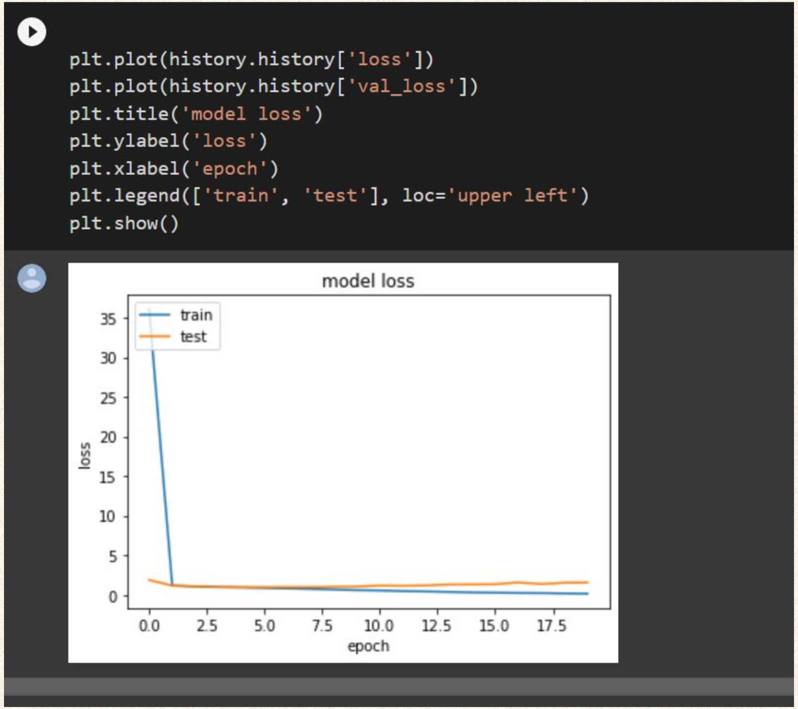
04

Deep Learning

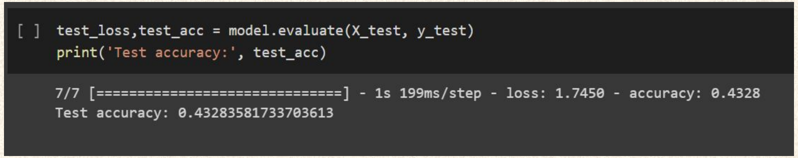


```
plt.plot(history.history['accuracy'])
plt.plot(history.history['val_accuracy'])
plt.title('model accuracy')
plt.ylabel('accuracy')
plt.xlabel('epoch')
plt.legend(['train', 'test'], loc='upper left')
```

```
<matplotlib.legend.Legend at 0x7f92bc0480a0>
```



```
plt.plot(history.history['loss'])
plt.plot(history.history['val_loss'])
plt.title('model loss')
plt.ylabel('loss')
plt.xlabel('epoch')
plt.legend(['train', 'test'], loc='upper left')
plt.show()
```



```
[ ]  test_loss,test_acc = model.evaluate(X_test, y_test)
     print('Test accuracy:', test_acc)

     7/7 [==============================] - 1s 199ms/step - loss: 1.7450 - accuracy: 0.4328
     Test accuracy: 0.43283581733703613
```

Aplicativilidad