# Primera ejecución del modelo CNN simple

## Estructura:

**from** **tensorflow.keras.preprocessing.image** **import** ImageDataGenerator

**from** **tensorflow.keras** **import** Sequential

**from** **tensorflow.keras.layers** **import** Conv2D, MaxPool2D, Dropout, Flatten, Dense, Activation

In [2]:

**import** **tensorflow** **as** **tf**

physical\_devices = tf.config.experimental.list\_physical\_devices('GPU')

tf.config.experimental.set\_memory\_growth(physical\_devices[0], **True**)

In [3]:

training\_datagen = ImageDataGenerator(rescale=1./255,

rotation\_range=0.2,

shear\_range=0.05,

zoom\_range=[0.95, 1.2],

horizontal\_flip=**True**, )

test\_datagen = ImageDataGenerator(rescale=1./255)

In [4]:

training\_path = '/home/ruben/workspace/tfg/deep-learning-facial-recognition/data/age/training'

test\_path = '/home/ruben/workspace/tfg/deep-learning-facial-recognition/data/age/test'

training\_set = training\_datagen.flow\_from\_directory(training\_path,

target\_size=(64, 64),

batch\_size=32,

class\_mode='categorical',

shuffle=**True**,

seed=42)

test\_set = test\_datagen.flow\_from\_directory(test\_path,

target\_size=(64, 64),

batch\_size=32,

class\_mode='categorical',

shuffle=**True**,

seed=42)

Found 18966 images belonging to 6 classes.

Found 4742 images belonging to 6 classes.

In [5]:

age\_classifier = Sequential()

age\_classifier.add(Conv2D(filters=32, kernel\_size=(3, 3), input\_shape=(64, 64, 3), activation='relu'))

age\_classifier.add(MaxPool2D(pool\_size=(2, 2)))

age\_classifier.add(Flatten())

age\_classifier.add(Dense(units=128, activation='relu'))

*# TODO: Think about using Dropout...*

age\_classifier.add(Dense(units=6, activation='softmax'))

In [6]:

age\_classifier.compile(optimizer='adam', loss='categorical\_crossentropy', metrics=['accuracy'])

In [7]:

age\_classifier.fit(training\_set,

steps\_per\_epoch=(18966//32),

epochs=25,

validation\_data=test\_set,

validation\_steps=(4742//32))

## Resultado:

1. Epoch 1/25
2. 592/592 [==============================] - 40s 68ms/step - loss: 1.2500 - accuracy: 0.4959 - val\_loss: 1.0011 - val\_accuracy: 0.5701
3. Epoch 2/25
4. 592/592 [==============================] - 39s 66ms/step - loss: 0.9855 - accuracy: 0.5852 - val\_loss: 1.0253 - val\_accuracy: 0.5557
5. Epoch 3/25
6. 592/592 [==============================] - 40s 68ms/step - loss: 0.9254 - accuracy: 0.6067 - val\_loss: 0.9454 - val\_accuracy: 0.5893
7. Epoch 4/25
8. 592/592 [==============================] - 40s 68ms/step - loss: 0.8998 - accuracy: 0.6190 - val\_loss: 0.8933 - val\_accuracy: 0.6117
9. Epoch 5/25
10. 592/592 [==============================] - 40s 68ms/step - loss: 0.8698 - accuracy: 0.6280 - val\_loss: 0.9030 - val\_accuracy: 0.6058
11. Epoch 6/25
12. 592/592 [==============================] - 40s 68ms/step - loss: 0.8497 - accuracy: 0.6347 - val\_loss: 0.8795 - val\_accuracy: 0.6176
13. Epoch 7/25
14. 592/592 [==============================] - 41s 69ms/step - loss: 0.8342 - accuracy: 0.6444 - val\_loss: 0.8657 - val\_accuracy: 0.6292
15. Epoch 8/25
16. 592/592 [==============================] - 41s 69ms/step - loss: 0.8159 - accuracy: 0.6489 - val\_loss: 0.8856 - val\_accuracy: 0.6035
17. Epoch 9/25
18. 592/592 [==============================] - 42s 71ms/step - loss: 0.8036 - accuracy: 0.6525 - val\_loss: 0.8536 - val\_accuracy: 0.6305
19. Epoch 10/25
20. 592/592 [==============================] - 41s 69ms/step - loss: 0.7868 - accuracy: 0.6607 - val\_loss: 0.8524 - val\_accuracy: 0.6261
21. Epoch 11/25
22. 592/592 [==============================] - 40s 67ms/step - loss: 0.7746 - accuracy: 0.6682 - val\_loss: 0.8792 - val\_accuracy: 0.6182
23. Epoch 12/25
24. 592/592 [==============================] - 39s 67ms/step - loss: 0.7591 - accuracy: 0.6725 - val\_loss: 0.8713 - val\_accuracy: 0.6263
25. Epoch 13/25
26. 592/592 [==============================] - 40s 67ms/step - loss: 0.7499 - accuracy: 0.6749 - val\_loss: 0.8709 - val\_accuracy: 0.6280
27. Epoch 14/25
28. 592/592 [==============================] - 40s 68ms/step - loss: 0.7441 - accuracy: 0.6779 - val\_loss: 0.8524 - val\_accuracy: 0.6328
29. Epoch 15/25
30. 592/592 [==============================] - 42s 71ms/step - loss: 0.7295 - accuracy: 0.6861 - val\_loss: 0.8537 - val\_accuracy: 0.6223
31. Epoch 16/25
32. 592/592 [==============================] - 41s 70ms/step - loss: 0.7198 - accuracy: 0.6933 - val\_loss: 0.8344 - val\_accuracy: 0.6313
33. Epoch 17/25
34. 592/592 [==============================] - 40s 67ms/step - loss: 0.7112 - accuracy: 0.6888 - val\_loss: 0.8486 - val\_accuracy: 0.6214
35. Epoch 18/25
36. 592/592 [==============================] - 42s 71ms/step - loss: 0.7024 - accuracy: 0.6962 - val\_loss: 0.8361 - val\_accuracy: 0.6383
37. Epoch 19/25
38. 592/592 [==============================] - 42s 71ms/step - loss: 0.6928 - accuracy: 0.6991 - val\_loss: 0.8321 - val\_accuracy: 0.6410
39. Epoch 20/25
40. 592/592 [==============================] - 42s 71ms/step - loss: 0.6749 - accuracy: 0.7094 - val\_loss: 0.8426 - val\_accuracy: 0.6332
41. Epoch 21/25
42. 592/592 [==============================] - 43s 73ms/step - loss: 0.6694 - accuracy: 0.7121 - val\_loss: 0.8541 - val\_accuracy: 0.6391
43. Epoch 22/25
44. 592/592 [==============================] - 44s 75ms/step - loss: 0.6597 - accuracy: 0.7163 - val\_loss: 0.9019 - val\_accuracy: 0.6309
45. Epoch 23/25
46. 592/592 [==============================] - 43s 73ms/step - loss: 0.6499 - accuracy: 0.7197 - val\_loss: 0.8702 - val\_accuracy: 0.6425
47. Epoch 24/25
48. 592/592 [==============================] - 43s 73ms/step - loss: 0.6551 - accuracy: 0.7213 - val\_loss: 0.8372 - val\_accuracy: 0.6539
49. Epoch 25/25
50. 592/592 [==============================] - 42s 72ms/step - loss: 0.6349 - accuracy: 0.7278 - val\_loss: 0.8801 - val\_accuracy: 0.6356
51. Out[7]: