```
 1 D:\OneDrive\TFG\TFG_Python\venv\Scripts\python.exe C:\
   Users\elias\AppData\Local\JetBrains\Toolbox\apps\PyCharm-P
   \ch-0\183.4284.139\helpers\pydev\pydevconsole.py --mode=
   client --port=52931
 2
 3 import sys; print('Python %s on %s' % (sys.version, sys.
   platform))
 4 sys.path.extend(['D:\\OneDrive\\TFG\\TFG_Python', 'D:/
   OneDrive/TFG/TFG_Python'])
 5
 6 PyDev console: starting.
 7
 8 Python 3.6.7 (v3.6.7:6ec5cf24b7, Oct 20 2018, 13:35:33) [
   MSC v.1900 64 bit (AMD64)] on win32
 9 >>> runfile('D:/OneDrive/TFG/TFG_Python/core/model.py',
   wdir='D:/OneDrive/TFG/TFG_Python/core')
10 Using TensorFlow backend.
11 ISBINARY: True
12 tipo
13 benign          2510
14 malignant       2510
15 premalignant    2510
16 dtype: int64
17 Valid gen: Img leidas= 0
18 Valid gen: Img leidas= 100
19 Valid gen: Img leidas= 200
20 Valid gen: Img leidas= 300
21 Valid gen: Img leidas= 400
22 Valid gen: Img leidas= 500
23 Valid gen: Img leidas= 600
24 Valid gen: Img leidas= 700
25 Valid gen: Img leidas= 800
26 Valid gen: Img leidas= 900
27 Valid gen: Img leidas= 1000
28 Valid gen: Img leidas= 1100
29 Valid gen: Img leidas= 1200
30 Creando modelo y compilandolo
31 2019-04-28 10:32:38.978596: I tensorflow/core/platform/
   cpu_feature_guard.cc:141] Your CPU supports instructions
   that this TensorFlow binary was not compiled to use: AVX2
32 2019-04-28 10:32:39.245543: I tensorflow/core/
   common_runtime/gpu/gpu_device.cc:1432] Found device 0 with
    properties:
33 name: GeForce GTX 1070 major: 6 minor: 1 memoryClockRate(
   GHz): 1.835
```

```
34 pciBusID: 0000:26:00.0
35 totalMemory: 8.00GiB freeMemory: 6.64GiB
36 2019-04-28 10:32:39.245731: I tensorflow/core/
   common_runtime/gpu/gpu_device.cc:1511] Adding visible gpu
   devices: 0
37 2019-04-28 10:32:42.669910: I tensorflow/core/
   common_runtime/gpu/gpu_device.cc:982] Device interconnect
   StreamExecutor with strength 1 edge matrix:
38 2019-04-28 10:32:42.670014: I tensorflow/core/
   common_runtime/gpu/gpu_device.cc:988]      0
39 2019-04-28 10:32:42.670071: I tensorflow/core/
   common_runtime/gpu/gpu_device.cc:1001] 0:   N
40 2019-04-28 10:32:42.670248: I tensorflow/core/
   common_runtime/gpu/gpu_device.cc:1115] Created TensorFlow
   device (/job:localhost/replica:0/task:0/device:GPU:0 with
   6397 MB memory) -> physical GPU (device: 0, name: GeForce
   GTX 1070, pci bus id: 0000:26:00.0, compute capability: 6.
   1)
41 Se comienza el entrenamiento del modelo
42 ['loss', 'acc']
43 Epoch 1/40
44 2019-04-28 10:33:19.924375: E tensorflow/stream_executor/
   cuda/cuda_blas.cc:464] failed to create cublas handle:
   CUBLAS_STATUS_ALLOC_FAILED
45 2019-04-28 10:33:19.942473: E tensorflow/stream_executor/
   cuda/cuda_blas.cc:464] failed to create cublas handle:
   CUBLAS_STATUS_ALLOC_FAILED
46 2019-04-28 10:33:19.963386: E tensorflow/stream_executor/
   cuda/cuda_blas.cc:464] failed to create cublas handle:
   CUBLAS_STATUS_ALLOC_FAILED
47 2019-04-28 10:33:19.963581: E tensorflow/stream_executor/
   cuda/cuda_blas.cc:464] failed to create cublas handle:
   CUBLAS_STATUS_ALLOC_FAILED
48 2019-04-28 10:33:19.963830: E tensorflow/stream_executor/
   cuda/cuda_blas.cc:464] failed to create cublas handle:
   CUBLAS_STATUS_ALLOC_FAILED
49 2019-04-28 10:33:19.963999: E tensorflow/stream_executor/
   cuda/cuda_blas.cc:464] failed to create cublas handle:
   CUBLAS_STATUS_ALLOC_FAILED
50  - 72s - loss: 0.1665 - acc: 0.6344 - val_loss: 0.2785 -
   val_acc: 0.5386
51 Epoch 2/40
52  - 73s - loss: 0.1084 - acc: 0.7615 - val_loss: 0.1968 -
   val_acc: 0.6365
53 Epoch 3/40
```

```
54  - 60s - loss: 0.1027 - acc: 0.7792 - val_loss: 0.1955 -
   val_acc: 0.5734
55 Epoch 4/40
56  - 70s - loss: 0.0959 - acc: 0.8156 - val_loss: 0.1001 -
   val_acc: 0.7917
57 Epoch 5/40
58  - 58s - loss: 0.0831 - acc: 0.8271 - val_loss: 0.0974 -
   val_acc: 0.7959
59 Epoch 6/40
60  - 61s - loss: 0.0858 - acc: 0.8198 - val_loss: 0.0840 -
   val_acc: 0.8282
61 Epoch 7/40
62  - 62s - loss: 0.0712 - acc: 0.8625 - val_loss: 0.0860 -
   val_acc: 0.8282
63 Epoch 8/40
64  - 82s - loss: 0.0810 - acc: 0.8344 - val_loss: 0.0848 -
   val_acc: 0.8216
65 Epoch 9/40
66  - 54s - loss: 0.0740 - acc: 0.8583 - val_loss: 0.1125 -
   val_acc: 0.7842
67 Epoch 10/40
68  - 61s - loss: 0.0722 - acc: 0.8552 - val_loss: 0.1378 -
   val_acc: 0.7154
69 Epoch 11/40
70  - 69s - loss: 0.0718 - acc: 0.8490 - val_loss: 0.1452 -
   val_acc: 0.6880
71
72 Epoch 00011: ReduceLROnPlateau reducing learning rate to 0
   .00020000000949949026.
73 Epoch 12/40
74  - 64s - loss: 0.0631 - acc: 0.8729 - val_loss: 0.0988 -
   val_acc: 0.7859
75 Epoch 13/40
76  - 69s - loss: 0.0529 - acc: 0.8938 - val_loss: 0.0812 -
   val_acc: 0.8282
77 Epoch 14/40
78  - 66s - loss: 0.0587 - acc: 0.8885 - val_loss: 0.0725 -
   val_acc: 0.8415
79 Epoch 15/40
80  - 63s - loss: 0.0584 - acc: 0.8823 - val_loss: 0.0687 -
   val_acc: 0.8556
81 Epoch 16/40
82  - 64s - loss: 0.0478 - acc: 0.9104 - val_loss: 0.0683 -
   val_acc: 0.8581
83 Epoch 17/40
```

```
 84  - 85s - loss: 0.0474 - acc: 0.9125 - val_loss: 0.0686 -
    val_acc: 0.8581
 85 Epoch 18/40
 86  - 56s - loss: 0.0449 - acc: 0.9125 - val_loss: 0.0654 -
    val_acc: 0.8622
 87 Epoch 19/40
 88  - 63s - loss: 0.0399 - acc: 0.9271 - val_loss: 0.0690 -
    val_acc: 0.8589
 89 Epoch 20/40
 90  - 65s - loss: 0.0423 - acc: 0.9156 - val_loss: 0.0627 -
    val_acc: 0.8680
 91 Epoch 21/40
 92  - 52s - loss: 0.0350 - acc: 0.9302 - val_loss: 0.0618 -
    val_acc: 0.8763
 93 Epoch 22/40
 94  - 56s - loss: 0.0273 - acc: 0.9427 - val_loss: 0.0632 -
    val_acc: 0.8656
 95 Epoch 23/40
 96  - 49s - loss: 0.0339 - acc: 0.9333 - val_loss: 0.0615 -
    val_acc: 0.8788
 97 Epoch 24/40
 98  - 65s - loss: 0.0336 - acc: 0.9354 - val_loss: 0.0625 -
    val_acc: 0.8730
 99 Epoch 25/40
100  - 57s - loss: 0.0272 - acc: 0.9469 - val_loss: 0.0611 -
    val_acc: 0.8739
101 Epoch 26/40
102  - 51s - loss: 0.0315 - acc: 0.9427 - val_loss: 0.0644 -
    val_acc: 0.8639
103 Epoch 27/40
104  - 49s - loss: 0.0278 - acc: 0.9458 - val_loss: 0.0646 -
    val_acc: 0.8614
105 Epoch 28/40
106  - 50s - loss: 0.0227 - acc: 0.9583 - val_loss: 0.0616 -
    val_acc: 0.8855
107 Epoch 29/40
108  - 51s - loss: 0.0213 - acc: 0.9625 - val_loss: 0.0686 -
    val_acc: 0.8680
109 Epoch 30/40
110  - 56s - loss: 0.0247 - acc: 0.9552 - val_loss: 0.0612 -
    val_acc: 0.8739
111
112 Epoch 00030: ReduceLROnPlateau reducing learning rate to
    2.0000000949949027e-05.
113 Epoch 31/40
```

```
 - 51s - loss: 0.0253 - acc: 0.9583 - val_loss: 0.0616 -
    val_acc: 0.8705
Epoch 32/40
 - 56s - loss: 0.0196 - acc: 0.9635 - val_loss: 0.0620 -
    val_acc: 0.8739
Epoch 33/40
 - 64s - loss: 0.0210 - acc: 0.9615 - val_loss: 0.0624 -
    val_acc: 0.8755
Epoch 34/40
 - 44s - loss: 0.0168 - acc: 0.9708 - val_loss: 0.0620 -
    val_acc: 0.8763
Epoch 35/40
 - 54s - loss: 0.0219 - acc: 0.9615 - val_loss: 0.0617 -
    val_acc: 0.8805

Epoch 00035: ReduceLROnPlateau reducing learning rate to
    2.0000001313746906e-06.
Entrenamiento completado, se procede al test final

  32/1506 [..............................] - ETA: 5s
  64/1506 [>.............................] - ETA: 5s
  96/1506 [>.............................] - ETA: 5s
 128/1506 [=>............................] - ETA: 4s
 160/1506 [==>...........................] - ETA: 4s
 192/1506 [==>...........................] - ETA: 4s
 224/1506 [===>..........................] - ETA: 4s
 256/1506 [====>.........................] - ETA: 4s
 288/1506 [====>.........................] - ETA: 4s
 320/1506 [=====>........................] - ETA: 4s
 352/1506 [======>.......................] - ETA: 3s
 384/1506 [======>.......................] - ETA: 3s
 416/1506 [=======>......................] - ETA: 3s
 448/1506 [=======>......................] - ETA: 3s
 480/1506 [========>.....................] - ETA: 3s
 512/1506 [========>.....................] - ETA: 3s
 544/1506 [========>.....................] - ETA: 3s
 576/1506 [==========>...................] - ETA: 3s
 608/1506 [==========>...................] - ETA: 3s
 640/1506 [==========>...................] - ETA: 2s
 672/1506 [===========>..................] - ETA: 2s
 704/1506 [============>.................] - ETA: 2s
 736/1506 [============>.................] - ETA: 2s
 768/1506 [=============>................] - ETA: 2s
 800/1506 [=============>................] - ETA: 2s
 832/1506 [==============>...............] - ETA: 2s
```

```
153  864/1506 [================>.............] - ETA: 2s
154  896/1506 [================>.............] - ETA: 2s
155  928/1506 [=================>............] - ETA: 1s
156  960/1506 [=================>............] - ETA: 1s
157  992/1506 [==================>...........] - ETA: 1s
158 1024/1506 [==================>...........] - ETA: 1s
159 1056/1506 [===================>..........] - ETA: 1s
160 1088/1506 [===================>..........] - ETA: 1s
161 1120/1506 [====================>.........] - ETA: 1s
162 1152/1506 [====================>.........] - ETA: 1s
163 1184/1506 [=====================>........] - ETA: 1s
164 1216/1506 [=====================>........] - ETA: 0s
165 1248/1506 [======================>.......] - ETA: 0s
166 1280/1506 [======================>.......] - ETA: 0s
167 1312/1506 [=======================>......] - ETA: 0s
168 1344/1506 [=======================>......] - ETA: 0s
169 1376/1506 [========================>.....] - ETA: 0s
170 1408/1506 [========================>.....] - ETA: 0s
171 1440/1506 [=========================>....] - ETA: 0s
172 1472/1506 [=========================>....] - ETA: 0s
173 1504/1506 [==========================>...] - ETA: 0s
174 1506/1506 [==============================] - 5s 4ms/step
175 ['loss', 'acc']
176 [0.05613099455160607, 0.8844621513944223]
177 Ahora vamos a dibujar la matriz de confusion
178 ['benign', 'premalignant', 'malignant']
179 Normalized confusion matrix
180 [[0.81325301 0.15863454 0.02811245]
181  [0.14092664 0.85521236 0.003861  ]
182  [0.01020408 0.00204082 0.9877551 ]]
183 El entrenamiento ha llevado : 2367.3981127738953
184
```