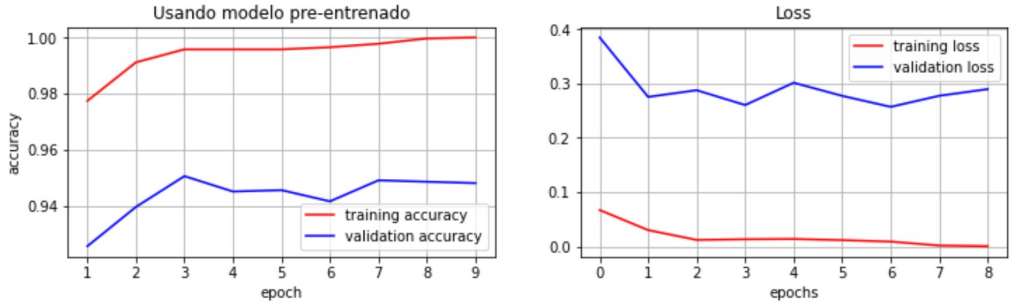
```
Imagenes entrenamiento originales: 8000
Imagenes entrenamiento con augmentation: 8000
Entrenamiento: Imágenes con tatuajes: 4596  sin: 3404  total imágenes de train: 8000
Validación: Imágenes con tatuajes:    1149  sin: 851  total imágenes de validate: 2000
Test: Imágenes con tatuajes:    1149  sin: 851  total imágenes de test: 2000
Entrenando sin augmentation
Epoch 1/30
250/250 [==============================] - 32s 129ms/step - loss: 0.4688 - accuracy: 0.8048 - val_loss: 0.2630 - val_accuracy: 0.8965 - lr: 1.0000e-04
Epoch 2/30
250/250 [==============================] - 32s 127ms/step - loss: 0.2117 - accuracy: 0.9190 - val_loss: 0.1879 - val_accuracy: 0.9315 - lr: 1.0000e-04
Epoch 3/30
250/250 [==============================] - 32s 127ms/step - loss: 0.1373 - accuracy: 0.9510 - val_loss: 0.1723 - val_accuracy: 0.9350 - lr: 1.0000e-04
Epoch 4/30
250/250 [==============================] - 32s 127ms/step - loss: 0.1035 - accuracy: 0.9606 - val_loss: 0.1752 - val_accuracy: 0.9410 - lr: 1.0000e-04
Epoch 5/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0744 - accuracy: 0.9739 - val_loss: 0.1670 - val_accuracy: 0.9435 - lr: 1.0000e-04
Epoch 6/30
250/250 [==============================] - ETA: 0s - loss: 0.0611 - accuracy: 0.9796
Epoch 00006: ReduceLROnPlateau reducing learning rate to 2.499999936844688e-05.
250/250 [==============================] - 32s 127ms/step - loss: 0.0611 - accuracy: 0.9796 - val_loss: 0.2810 - val_accuracy: 0.9290 - lr: 1.0000e-04
Epoch 7/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0122 - accuracy: 0.9959 - val_loss: 0.2316 - val_accuracy: 0.9475 - lr: 2.5000e-05
Epoch 8/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0010 - accuracy: 1.0000 - val_loss: 0.2372 - val_accuracy: 0.9470 - lr: 2.5000e-05
Epoch 9/30
250/250 [==============================] - ETA: 0s - loss: 3.4314e-04 - accuracy: 1.0000
Epoch 00009: ReduceLROnPlateau reducing learning rate to 6.24999984211172e-06.
250/250 [==============================] - 32s 127ms/step - loss: 3.4314e-04 - accuracy: 1.0000 - val_loss: 0.2587 - val_accuracy: 0.9465 - lr: 2.5000e-05
Epoch 10/30
250/250 [==============================] - ETA: 0s - loss: 2.1287e-04 - accuracy: 1.0000Restoring model weights from the end of the best epoch.
250/250 [==============================] - 32s 127ms/step - loss: 2.1287e-04 - accuracy: 1.0000 - val_loss: 0.2631 - val_accuracy: 0.9465 - lr: 6.2500e-06
Epoch 00010: early stopping
Saved model to disk at 20200627-15:22-
Entrenando sin augmentation
Epoch 1/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0667 - accuracy: 0.9774 - val_loss: 0.3842 - val_accuracy: 0.9255 - lr: 0.0010
Epoch 2/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0298 - accuracy: 0.9911 - val_loss: 0.2748 - val_accuracy: 0.9395 - lr: 0.0010
Epoch 3/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0118 - accuracy: 0.9958 - val_loss: 0.2871 - val_accuracy: 0.9505 - lr: 0.0010
Epoch 4/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0130 - accuracy: 0.9958 - val_loss: 0.2599 - val_accuracy: 0.9450 - lr: 0.0010
Epoch 5/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0135 - accuracy: 0.9958 - val_loss: 0.3009 - val_accuracy: 0.9455 - lr: 0.0010
Epoch 6/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0114 - accuracy: 0.9965 - val_loss: 0.2768 - val_accuracy: 0.9415 - lr: 0.0010
Epoch 7/30
250/250 [==============================] - ETA: 0s - loss: 0.0086 - accuracy: 0.9977
Epoch 00007: ReduceLROnPlateau reducing learning rate to 0.0002500000118743628.
250/250 [==============================] - 32s 127ms/step - loss: 0.0086 - accuracy: 0.9977 - val_loss: 0.2566 - val_accuracy: 0.9490 - lr: 0.0010
Epoch 8/30
250/250 [==============================] - 32s 127ms/step - loss: 0.0015 - accuracy: 0.9996 - val_loss: 0.2769 - val_accuracy: 0.9485 - lr: 2.5000e-04
```

```
Epoch 9/30
250/250 [==============================] - ETA: 0s - loss: 2.9623e-04 - accuracy: 1.0000Restoring model weights from the end of the best epoch.
250/250 [==============================] - 32s 127ms/step - loss: 2.9623e-04 - accuracy: 1.0000 - val_loss: 0.2892 - val_accuracy: 0.9480 - lr: 2.5000e-04
Epoch 00009: early stopping
Saved model to disk at 20200627-15:27-
```



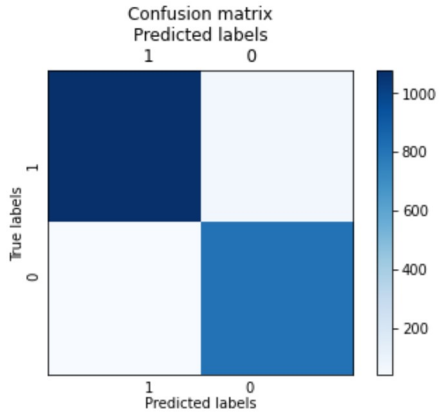

```
Evaluando modelo ...
WARNING:tensorflow:From <ipython-input-8-5aaea5141803>:13: Sequential.predict_classes (from tensorflow.python.keras.engine.sequential) is deprecated and will be removed after
Instructions for updating:
Please use instead:* `np.argmax(model.predict(x), axis=-1)`,   if your model does multi-class classification   (e.g. if it uses a `softmax` last-layer activation).* `(model.p
63/63 [==============================] - 5s 72ms/step
Clases reales:    [0 0 0 0 0 0 0 1 0 1 0 1 0 0 0 1 0 1 0 0 0 1 1 0 1 1 0 1 0 1]
Clases predichas: [0 0 0 0 0 0 0 1 0 1 0 1 0 0 0 1 0 1 0 0 0 1 1 0 1 1 0 0 0 1]

 Classification Report
              precision    recall  f1-score   support

           0       0.92      0.95      0.94       851
           1       0.97      0.94      0.95      1149

    accuracy                           0.94      2000
   macro avg       0.94      0.95      0.94      2000
weighted avg       0.95      0.94      0.95      2000

Matriz de confusión
prediction     1    0
label
1           1078   71
0             39  812
```


Confusion matrix
Predicted labels
1
0
True labels
1
0
1000
800
600
400
200
1
0
Predicted labels
