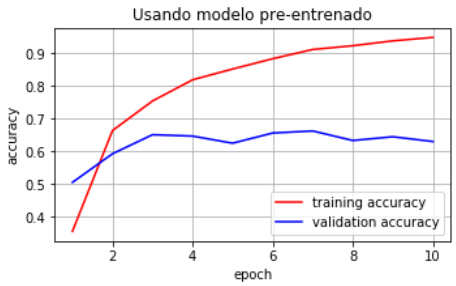
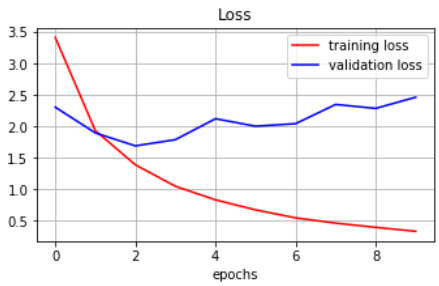
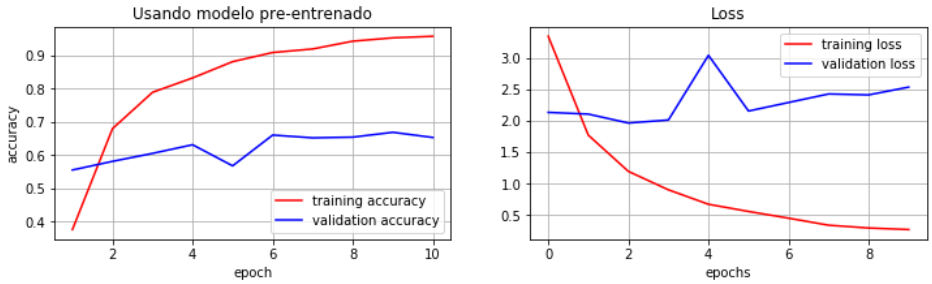
```
============================================================
Experimento Xception 7
experimento = Experimento Xception 7
model = <keras.engine.training.Model object at 0x7fa1e55c0da0>
samples_per_class = 100
number_of_classes = 102
optimizador = rmsprop
clasificador = XCEPTION-1
batch_size = 128
epochs = 10
run_experiment = True
------------------------------------------------------------
Creando sub-conjunto de datos con  102  clases y  100 muestras por clase
number_of_classes: 102
Sub-conjunto con 102 clases creado.
Cantidad de muestras: 6398
Creando datos de train, validate y test ...
Datos de train, validate y test creados.

Split de Entrenamiento, Validación y prueba: 4478, 960, 960
Número de clases: 102
Número de muestras: 100
Usando rmsprop
Train on 4478 samples, validate on 960 samples
Epoch 1/10
4478/4478 [==============================] - 18s 4ms/step - loss: 3.4140 - acc: 0.3553 - val_loss: 2.3047 - val_acc: 0.5052
Epoch 2/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.9321 - acc: 0.6637 - val_loss: 1.8954 - val_acc: 0.5927
Epoch 3/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.3874 - acc: 0.7544 - val_loss: 1.6890 - val_acc: 0.6510
Epoch 4/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.0469 - acc: 0.8191 - val_loss: 1.7882 - val_acc: 0.6469
Epoch 5/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.8305 - acc: 0.8522 - val_loss: 2.1212 - val_acc: 0.6250
Epoch 6/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.6711 - acc: 0.8837 - val_loss: 2.0021 - val_acc: 0.6562
Epoch 7/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.5442 - acc: 0.9120 - val_loss: 2.0417 - val_acc: 0.6625
Epoch 8/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.4601 - acc: 0.9234 - val_loss: 2.3479 - val_acc: 0.6333
Epoch 9/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.3934 - acc: 0.9384 - val_loss: 2.2850 - val_acc: 0.6448
Epoch 10/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.3301 - acc: 0.9489 - val_loss: 2.4631 - val_acc: 0.6302
```



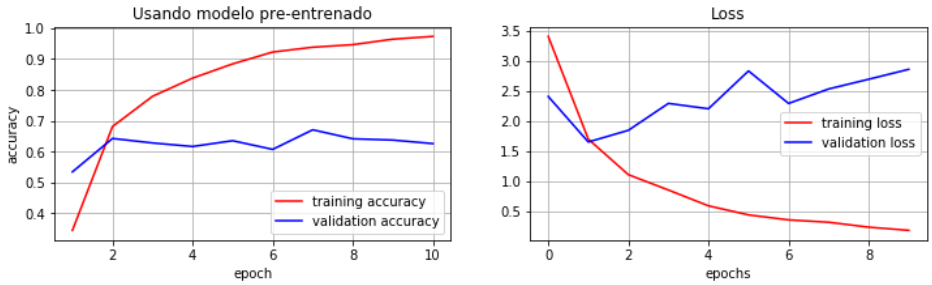



```
Exactitud en subconjunto de test:
Test loss: 2.346108893553416
Test accuracy: 0.640625

Exactitud en todo el dataset:
Test loss: 2.255614725056452
Test accuracy: 0.6395844724349079
============================================================
Experimento Xception 8
experimento = Experimento Xception 8
model = <keras.engine.training.Model object at 0x7fa1e55c0da0>
samples_per_class = 100
number_of_classes = 102
optimizador = rmsprop
clasificador = XCEPTION-2
batch_size = 128
epochs = 10
run_experiment = True
------------------------------------------------------------
Número de clases: 102
Número de muestras: 100
Usando rmsprop
Train on 4478 samples, validate on 960 samples
Epoch 1/10
4478/4478 [==============================] - 19s 4ms/step - loss: 3.3392 - acc: 0.3758 - val_loss: 2.1307 - val_acc: 0.5552
Epoch 2/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.7685 - acc: 0.6798 - val_loss: 2.1031 - val_acc: 0.5813
Epoch 3/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.1938 - acc: 0.7892 - val_loss: 1.9617 - val_acc: 0.6052
Epoch 4/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.9007 - acc: 0.8325 - val_loss: 2.0096 - val_acc: 0.6312
Epoch 5/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.6711 - acc: 0.8816 - val_loss: 3.0372 - val_acc: 0.5677
Epoch 6/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.5570 - acc: 0.9091 - val_loss: 2.1520 - val_acc: 0.6604
Epoch 7/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.4501 - acc: 0.9198 - val_loss: 2.2875 - val_acc: 0.6521
```

```
Epoch 8/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.3388 - acc: 0.9433 - val_loss: 2.4228 - val_acc: 0.6542
Epoch 9/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.2941 - acc: 0.9533 - val_loss: 2.4084 - val_acc: 0.6687
Epoch 10/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.2698 - acc: 0.9580 - val_loss: 2.5320 - val_acc: 0.6531
```

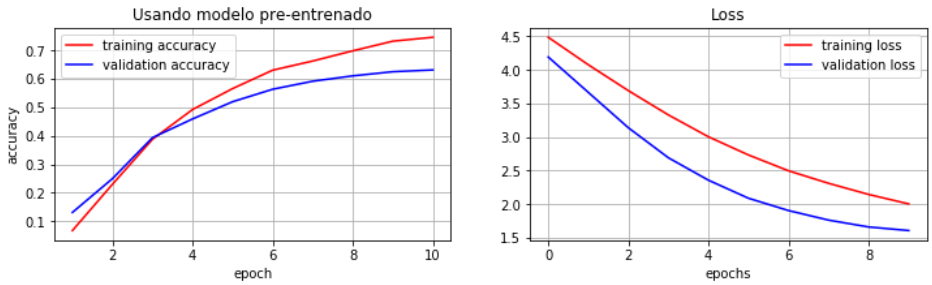



```
Exactitud en subconjunto de test:
Test loss: 2.3346556584040323
Test accuracy: 0.6697916666666667

Exactitud en todo el dataset:
Test loss: 2.243409514033471
Test accuracy: 0.6601421542282375
============================================================
Experimento Xception 9
experimento = Experimento Xception 9
model = <keras.engine.training.Model object at 0x7fa1e55c0da0>
samples_per_class = 100
number_of_classes = 102
optimizador = rmsprop
clasificador = XCEPTION-3
batch_size = 128
epochs = 10
run_experiment = True
------------------------------------------------------------
Número de clases: 102
Número de muestras: 100
Usando rmsprop
Train on 4478 samples, validate on 960 samples
Epoch 1/10
4478/4478 [==============================] - 20s 4ms/step - loss: 3.4052 - acc: 0.3448 - val_loss: 2.4054 - val_acc: 0.5344
Epoch 2/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.6958 - acc: 0.6813 - val_loss: 1.6480 - val_acc: 0.6427
Epoch 3/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.1041 - acc: 0.7794 - val_loss: 1.8427 - val_acc: 0.6281
Epoch 4/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.8490 - acc: 0.8383 - val_loss: 2.2902 - val_acc: 0.6167
Epoch 5/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.5858 - acc: 0.8845 - val_loss: 2.2010 - val_acc: 0.6354
Epoch 6/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.4347 - acc: 0.9230 - val_loss: 2.8306 - val_acc: 0.6073
Epoch 7/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.3515 - acc: 0.9386 - val_loss: 2.2894 - val_acc: 0.6708
Epoch 8/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.3124 - acc: 0.9469 - val_loss: 2.5304 - val_acc: 0.6417
Epoch 9/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.2303 - acc: 0.9647 - val_loss: 2.6921 - val_acc: 0.6375
Epoch 10/10
4478/4478 [==============================] - 6s 1ms/step - loss: 0.1778 - acc: 0.9736 - val_loss: 2.8575 - val_acc: 0.6260
```

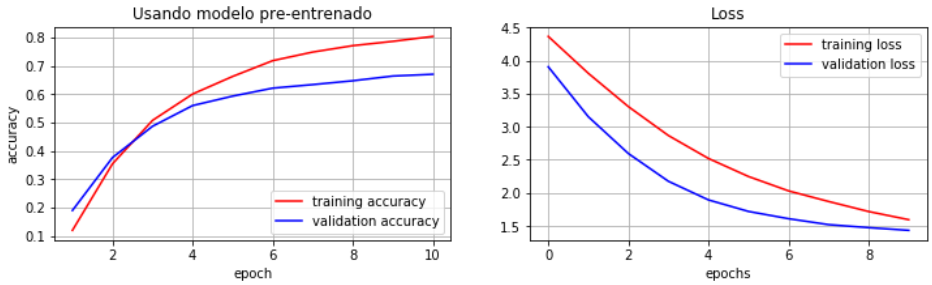



```
Exactitud en subconjunto de test:
Test loss: 2.668974002202352
Test accuracy: 0.6479166666666667

Exactitud en todo el dataset:
Test loss: 2.460673413096392
Test accuracy: 0.6553307818936285
============================================================
Experimento Xception 10
experimento = Experimento Xception 10
model = <keras.engine.training.Model object at 0x7fa1e55c0da0>
samples_per_class = 100
number_of_classes = 102
optimizador = Adam
clasificador = XCEPTION-1
batch_size = 128
epochs = 10
run_experiment = True
------------------------------------------------------------
Número de clases: 102
```

```
Número de clases: 102
Número de muestras: 100
Usando Adam
Train on 4478 samples, validate on 960 samples
Epoch 1/10
4478/4478 [==============================] - 20s 4ms/step - loss: 4.4839 - acc: 0.0677 - val_loss: 4.1903 - val_acc: 0.1313
Epoch 2/10
4478/4478 [==============================] - 6s 1ms/step - loss: 4.0746 - acc: 0.2302 - val_loss: 3.6640 - val_acc: 0.2500
Epoch 3/10
4478/4478 [==============================] - 6s 1ms/step - loss: 3.6898 - acc: 0.3881 - val_loss: 3.1374 - val_acc: 0.3937
Epoch 4/10
4478/4478 [==============================] - 6s 1ms/step - loss: 3.3283 - acc: 0.4924 - val_loss: 2.6908 - val_acc: 0.4594
Epoch 5/10
4478/4478 [==============================] - 6s 1ms/step - loss: 3.0028 - acc: 0.5659 - val_loss: 2.3570 - val_acc: 0.5198
Epoch 6/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.7325 - acc: 0.6304 - val_loss: 2.0883 - val_acc: 0.5635
Epoch 7/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.4969 - acc: 0.6626 - val_loss: 1.9053 - val_acc: 0.5917
Epoch 8/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.3105 - acc: 0.6983 - val_loss: 1.7630 - val_acc: 0.6104
Epoch 9/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.1448 - acc: 0.7322 - val_loss: 1.6611 - val_acc: 0.6250
Epoch 10/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.0043 - acc: 0.7459 - val_loss: 1.6080 - val_acc: 0.6312
```

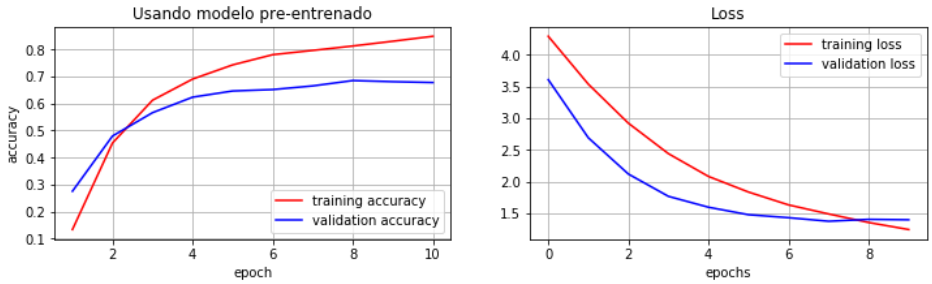



```
Exactitud en subconjunto de test:
Test loss: 1.4922572493553161
Test accuracy: 0.6822916666666666

Exactitud en todo el dataset:
Test loss: 1.6053566117693063
Test accuracy: 0.6618917441224713
============================================================
Experimento Xception 11
experimento = Experimento Xception 11
model = <keras.engine.training.Model object at 0x7fa1e55c0da0>
samples_per_class = 100
number_of_classes = 102
optimizador = Adam
clasificador = XCEPTION-2
batch_size = 128
epochs = 10
run_experiment = True
------------------------------------------------------------
Número de clases: 102
Número de muestras: 100
Usando Adam
Train on 4478 samples, validate on 960 samples
Epoch 1/10
4478/4478 [==============================] - 21s 5ms/step - loss: 4.3661 - acc: 0.1195 - val_loss: 3.9069 - val_acc: 0.1896
Epoch 2/10
4478/4478 [==============================] - 6s 1ms/step - loss: 3.8083 - acc: 0.3540 - val_loss: 3.1517 - val_acc: 0.3760
Epoch 3/10
4478/4478 [==============================] - 6s 1ms/step - loss: 3.3047 - acc: 0.5071 - val_loss: 2.5952 - val_acc: 0.4865
Epoch 4/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.8673 - acc: 0.6000 - val_loss: 2.1752 - val_acc: 0.5594
Epoch 5/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.5203 - acc: 0.6621 - val_loss: 1.8937 - val_acc: 0.5927
Epoch 6/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.2474 - acc: 0.7177 - val_loss: 1.7194 - val_acc: 0.6208
Epoch 7/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.0301 - acc: 0.7481 - val_loss: 1.6095 - val_acc: 0.6333
Epoch 8/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.8698 - acc: 0.7707 - val_loss: 1.5198 - val_acc: 0.6469
Epoch 9/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.7178 - acc: 0.7858 - val_loss: 1.4743 - val_acc: 0.6635
Epoch 10/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.5946 - acc: 0.8033 - val_loss: 1.4335 - val_acc: 0.6698
```




```
Exactitud en subconjunto de test:
Test loss: 1.3223291913668314
```

```
Test accuracy: 0.6895833333333333

Exactitud en todo el dataset:
Test loss: 1.4278766341829248
Test accuracy: 0.6861673045836231
============================================================
Experimento Xception 12
experimento = Experimento Xception 12
model = <keras.engine.training.Model object at 0x7fa1e55c0da0>
samples_per_class = 100
number_of_classes = 102
optimizador = Adam
clasificador = XCEPTION-3
batch_size = 128
epochs = 10
run_experiment = True
------------------------------------------------------------
Número de clases: 102
Número de muestras: 100
Usando Adam
Train on 4478 samples, validate on 960 samples
Epoch 1/10
4478/4478 [==============================] - 22s 5ms/step - loss: 4.2891 - acc: 0.1333 - val_loss: 3.6063 - val_acc: 0.2750
Epoch 2/10
4478/4478 [==============================] - 6s 1ms/step - loss: 3.5353 - acc: 0.4533 - val_loss: 2.6910 - val_acc: 0.4792
Epoch 3/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.9209 - acc: 0.6117 - val_loss: 2.1202 - val_acc: 0.5656
Epoch 4/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.4408 - acc: 0.6898 - val_loss: 1.7687 - val_acc: 0.6229
Epoch 5/10
4478/4478 [==============================] - 6s 1ms/step - loss: 2.0821 - acc: 0.7423 - val_loss: 1.5973 - val_acc: 0.6458
Epoch 6/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.8362 - acc: 0.7800 - val_loss: 1.4792 - val_acc: 0.6510
Epoch 7/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.6337 - acc: 0.7959 - val_loss: 1.4323 - val_acc: 0.6646
Epoch 8/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.4913 - acc: 0.8122 - val_loss: 1.3763 - val_acc: 0.6844
Epoch 9/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.3566 - acc: 0.8298 - val_loss: 1.4061 - val_acc: 0.6802
Epoch 10/10
4478/4478 [==============================] - 6s 1ms/step - loss: 1.2459 - acc: 0.8481 - val_loss: 1.3997 - val_acc: 0.6771
```




```
Exactitud en subconjunto de test:
Test loss: 1.274797248840332
Test accuracy: 0.6875

Exactitud en todo el dataset:
Test loss: 1.3335698589080707
Test accuracy: 0.6944778567979478
```

Resultados XCEPTION

Lote 1

[Ver PDF con el output de pruebas del lote 1]

Las gráficas usando **rmsprop** muestran un overfitting mientras que con **Adam** parececieran que se puede mejorar con mas epocas, usaremos estos datos para el próximo lote de pruebas.

Experimento	Muestras*Clase	Optimizador	Clasificador	Batch Size	epocas	Tiempo Entrenamiento	Exac. Test	Exact. Full	Loss Test	Loss Full
XCEPTION-1	30	rmsprop	XCEPTION-1	128	10	35	56%	48%	2.84	3.39
XCEPTION-2	30	rmsprop	XCEPTION-2	128	10	35	**61%**	**55%**	**2.83**	**2.79**
XCEPTION-3	30	rmsprop	XCEPTION-3	128	10	35	41%	34%	5.47	5.71
XCEPTION-4	30	Adam	XCEPTION-1	128	10	36	51%	42%	2.44	2.86
XCEPTION-5	30	Adam	XCEPTION-2	128	10	37	54%	50%	2.04	2.38
XCEPTION-6	30	Adam	XCEPTION-3	128	10	38	**59%**	**54%**	**1.79**	**2.13**