Contrast stretching

Train on 8178 samples, validate on 2044 samples

Epoch 1/10

8178/8178 [==============================] - 129s 16ms/step - loss: 1.6550 - acc: 0.6573 - val\_loss: 0.5570 - val\_acc: 0.8430

Epoch 2/10

8178/8178 [==============================] - 102s 13ms/step - loss: 0.7394 - acc: 0.8037 - val\_loss: 0.5499 - val\_acc: 0.8356

Epoch 3/10

8178/8178 [==============================] - 91s 11ms/step - loss: 0.6496 - acc: 0.8184 - val\_loss: 0.5695 - val\_acc: 0.8410

Epoch 4/10

8178/8178 [==============================] - 90s 11ms/step - loss: 0.5811 - acc: 0.8361 - val\_loss: 0.5780 - val\_acc: 0.8386

Epoch 5/10

8178/8178 [==============================] - 91s 11ms/step - loss: 0.5453 - acc: 0.8436 - val\_loss: 0.5772 - val\_acc: 0.8483

Epoch 6/10

8178/8178 [==============================] - 101s 12ms/step - loss: 0.5184 - acc: 0.8531 - val\_loss: 0.5948 - val\_acc: 0.8410

Epoch 7/10

8178/8178 [==============================] - 110s 13ms/step - loss: 0.4794 - acc: 0.8579 - val\_loss: 0.6006 - val\_acc: 0.8366

Epoch 8/10

8178/8178 [==============================] - 103s 13ms/step - loss: 0.4659 - acc: 0.8616 - val\_loss: 0.6162 - val\_acc: 0.8478

Epoch 9/10

8178/8178 [==============================] - 99s 12ms/step - loss: 0.4326 - acc: 0.8687 - val\_loss: 0.6321 - val\_acc: 0.8410

Epoch 10/10

8178/8178 [==============================] - 97s 12ms/step - loss: 0.4287 - acc: 0.8743 - val\_loss: 0.6045 - val\_acc: 0.8478

No filter

Train on 8178 samples, validate on 2044 samples

Epoch 1/10

8178/8178 [==============================] - 97s 12ms/step - loss: 1.6510 - acc: 0.6542 - val\_loss: 0.5689 - val\_acc: 0.8405

Epoch 2/10

8178/8178 [==============================] - 70s 9ms/step - loss: 0.7305 - acc: 0.8094 - val\_loss: 0.5762 - val\_acc: 0.8327

Epoch 3/10

8178/8178 [==============================] - 58s 7ms/step - loss: 0.6253 - acc: 0.8264 - val\_loss: 0.5553 - val\_acc: 0.8493

Epoch 4/10

8178/8178 [==============================] - 58s 7ms/step - loss: 0.5742 - acc: 0.8341 - val\_loss: 0.5827 - val\_acc: 0.8493

Epoch 5/10

8178/8178 [==============================] - 55s 7ms/step - loss: 0.5358 - acc: 0.8489 - val\_loss: 0.5805 - val\_acc: 0.8464

Epoch 6/10

8178/8178 [==============================] - 61s 7ms/step - loss: 0.5147 - acc: 0.8492 - val\_loss: 0.5622 - val\_acc: 0.8483

Epoch 7/10

8178/8178 [==============================] - 56s 7ms/step - loss: 0.4967 - acc: 0.8522 - val\_loss: 0.5982 - val\_acc: 0.8464

Epoch 8/10

8178/8178 [==============================] - 56s 7ms/step - loss: 0.4729 - acc: 0.8585 - val\_loss: 0.5956 - val\_acc: 0.8508

Epoch 9/10

8178/8178 [==============================] - 55s 7ms/step - loss: 0.4480 - acc: 0.8684 - val\_loss: 0.5998 - val\_acc: 0.8390

Epoch 10/10

8178/8178 [==============================] - 60s 7ms/step - loss: 0.4194 - acc: 0.8725 - val\_loss: 0.6036 - val\_acc: 0.8430

Epoch 1/10

127/127 [==============================] - 363s 3s/step - loss: 4.4934 - acc: 0.1512 - val\_loss: 4.1428 - val\_acc: 0.4471

Epoch 2/10

127/127 [==============================] - 356s 3s/step - loss: 3.8281 - acc: 0.5533 - val\_loss: 3.4289 - val\_acc: 0.7419

Epoch 3/10

127/127 [==============================] - 347s 3s/step - loss: 3.1062 - acc: 0.7104 - val\_loss: 2.6430 - val\_acc: 0.8030

Epoch 4/10

127/127 [==============================] - 347s 3s/step - loss: 2.3859 - acc: 0.7716 - val\_loss: 1.9371 - val\_acc: 0.8394

Epoch 5/10

127/127 [==============================] - 347s 3s/step - loss: 1.7899 - acc: 0.8054 - val\_loss: 1.3950 - val\_acc: 0.8591

Epoch 6/10

127/127 [==============================] - 347s 3s/step - loss: 1.3538 - acc: 0.8358 - val\_loss: 1.0494 - val\_acc: 0.8682

Epoch 7/10

127/127 [==============================] - 347s 3s/step - loss: 1.0798 - acc: 0.8424 - val\_loss: 0.8251 - val\_acc: 0.8788

Epoch 8/10

127/127 [==============================] - 348s 3s/step - loss: 0.9038 - acc: 0.8470 - val\_loss: 0.6834 - val\_acc: 0.8773

Epoch 9/10

127/127 [==============================] - 348s 3s/step - loss: 0.7912 - acc: 0.8509 - val\_loss: 0.5942 - val\_acc: 0.8783

Epoch 10/10

127/127 [==============================] - 347s 3s/step - loss: 0.7237 - acc: 0.8544 - val\_loss: 0.5453 - val\_acc: 0.8778

Epoch 1/10

127/127 [==============================] - 346s 3s/step - loss: 4.6555 - acc: 0.0699 - val\_loss: 4.5054 - val\_acc: 0.2162

Epoch 2/10

127/127 [==============================] - 299s 2s/step - loss: 4.2817 - acc: 0.3740 - val\_loss: 4.1598 - val\_acc: 0.5091

Epoch 3/10

127/127 [==============================] - 283s 2s/step - loss: 3.8600 - acc: 0.5747 - val\_loss: 3.7515 - val\_acc: 0.6424

Epoch 4/10

127/127 [==============================] - 311s 2s/step - loss: 3.3699 - acc: 0.6709 - val\_loss: 3.2871 - val\_acc: 0.7076

Epoch 5/10

127/127 [==============================] - 287s 2s/step - loss: 2.8586 - acc: 0.7252 - val\_loss: 2.8116 - val\_acc: 0.7480

Epoch 6/10

127/127 [==============================] - 283s 2s/step - loss: 2.3558 - acc: 0.7675 - val\_loss: 2.3811 - val\_acc: 0.7747

Epoch 7/10

127/127 [==============================] - 284s 2s/step - loss: 1.9227 - acc: 0.7972 - val\_loss: 1.9913 - val\_acc: 0.8066

Epoch 8/10

127/127 [==============================] - 283s 2s/step - loss: 1.5733 - acc: 0.8177 - val\_loss: 1.6622 - val\_acc: 0.8237

Epoch 9/10

127/127 [==============================] - 284s 2s/step - loss: 1.3143 - acc: 0.8399 - val\_loss: 1.4154 - val\_acc: 0.8460

Epoch 10/10

127/127 [==============================] - 284s 2s/step - loss: 1.1256 - acc: 0.8479 - val\_loss: 1.2451 - val\_acc: 0.8449

**loss: 4.5155 - acc: 0.1604 - val\_loss: 4.1603 - val\_acc: 0.4839**

Full contrast stretching:

loss: 4.5420 - acc: 0.1377 - val\_loss: 4.1655 - val\_acc: 0.4783

loss: 3.8557 - acc: 0.5562 - val\_loss: 3.4486 - val\_acc: 0.7737

loss: 3.1167 - acc: 0.7199 - val\_loss: 2.6520 - val\_acc: 0.8207

Logarithmic:

loss: 4.5717 - acc: 0.1073 - val\_loss: 4.2315 - val\_acc: 0.3911

loss: 3.9967 - acc: 0.4867 - val\_loss: 3.6011 - val\_acc: 0.7121

loss: 3.3704 - acc: 0.6482 - val\_loss: 2.8929 - val\_acc: 0.7838

Logarithmic + contrast stretching:

loss: 4.5438 - acc: 0.1103 - val\_loss: 4.1806 - val\_acc: 0.4158

loss: 3.9908 - acc: 0.4593 - val\_loss: 3.5398 - val\_acc: 0.7369

loss: 3.3923 - acc: 0.6205 - val\_loss: 2.8398 - val\_acc: 0.8202