FaceNet: Image – Preprocessing – CONVNet

Note: This is not a typical facial recognition/verification system since there is relatively large dataset available for a small group of people and no need to apply one- shot learning.

Layers in Red are implemented to reduce overfitting.

Layers Needed:

Preprocessing:

1. Raw Image (RGB)
2. Image loading
   - Resizing to (64, 64)
   - Splitting into the training/validation datasets with a batch size of 128
3. Data augmentation: To offset the effects caused by the limited dataset size
   - Randomly flip the images horizontally
   - Randomly rotate the images by a factor of 0.2
   - Rescaling the images by a factor of 255
4. Image

CONVNet:

1. CONV Block 1: To detect simple features like horizontal/vertical edges
   - 2D Convolutional layer with 16 3x3 filters
   - Batch Normalization
   - Relu Activation
   - Max Pooling layer with pool-size 3x3 and strides 2
2. CONV Block 2: To detect more complex features like circles
   - 2D Convolutional layer with 16 3x3 filters
   - Batch Normalization
   - Relu Activation
   - Max Pooling layer with pool-size 3x3 and strides 2
3. Fully Connected Layers
   - Average Pooling layer with pool-size 3x3 and strides 2
   - Dense layer with 16 neurons
   - Dropout layer with rate 0.2
   - Batch Normalization
   - Relu Activation
   - Dense layer with 1 neuron
   - Sigmoid Activation