Instructions

Training the model

Command: *python .\src\Train_ae.py*

Trains the model for adadelta optimizer and mean squared error loss function. Takes at least 50 - 60 mins to train on 9000 images on a system with 8GB RAM and NVidia GeForce GTX 1050 2GB.

The program stores the model file in two parts: .json and .h5 .json file contains the layer structure of the autoencoder and .h5 file contains the weights.

Dataset has 600 noisy and 600 ground truth images that are resized to 256x256 and cropped by 64x64 to generate 9000 images of which 7200 are used for training and 1800 for validating. The model is trained for 25 epochs. Please note due to memory issues, the training data and validation data are partitioned in 120 and 30 respectively and used for training the model.

More details on the methodology are available in the reports.

Checking the results

Command: *python .\src\demo.py*

Requests the user to input the path for an image to denoise using the autoencoder trained. The program will display the noisy image in 800x600 size along with the denoised image with dimensions 256x256

The user can enter the file paths until they hit ‘q’ or ESC

Additionally, an image preprocessing program is written for generating 9000 cropped images from 600 original images for model training purposes.