Training report for U-Net (2D) model (model_training_invLUT_XX)
Date: 2022-12-14

Information for your materials and method:

The U-Net (2D) model was trained from scratch for 100 epochs on 2592 paired image patches (image dimensions: (768, 768), patch size: (128,128)) with a batch size of 4 and a weighted_binary_crossentropy loss function, using the U-Net (2D) ZeroCostDL4Mic notebook (v 1) (von Chamier & Laine et al., 2020). Key python packages used include tensorflow (v 2.9.2), Keras (v reprocessing==1.1.2), numpy (v 1.21.6), cuda (v 11.2.152 Build cuda_11.2.r11.2/compiler.29618528_0). The training was accelerated using a Tesla T4 GPU.

Augmentation:

The dataset was augmented by
- rotation
- flipping
- random zoom magnification
- shifting
- image shearing

Parameters

The following parameters were used for training:

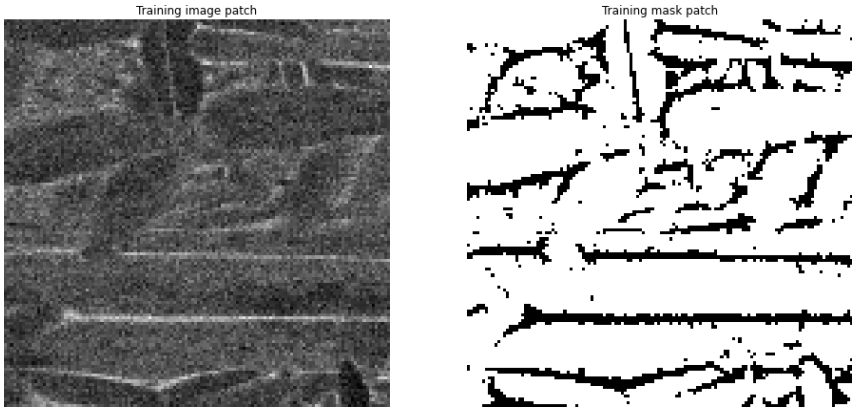
Parameter	Value
number_of_epochs	100
patch_size	128x128
batch_size	4
number_of_steps	584
percentage_validation	10
initial_learning_rate	0.001
pooling_steps	2
min_fraction	0.02

Training Dataset

Training_source: /content/gdrive/MyDrive/Project LQ/ProjectDocs/Training
Training_target: /content/gdrive/MyDrive/Project LQ/ProjectDocs/Target

Model Path: /content/gdrive/MyDrive/Project LQ/ProjectDocs/model_training_invLUT_XX

Example Training pair



References:
- ZeroCostDL4Mic: von Chamier, Lucas & Laine, Romain, et al. "Democratising deep learning for microscopy with ZeroCostDL4Mic." Nature Communications (2021).
- Unet: Ronneberger, Olaf, Philipp Fischer, and Thomas Brox. "U-net: Convolutional networks for biomedical image segmentation." International Conference on Medical image computing and computer-assisted intervention. Springer, Cham, 2015.

Important:
Remember to perform the quality control step on all newly trained models

Please consider depositing your training dataset on Zenodo