On this page, you can download a Matlab implementation of the phase split layers as described in [1], using MatConvNet 1-beta20 [2]. MatConvNet is from VGG lab at Oxford. It is built on MATLAB Parallel Toolbox. The MatConvNet is designed with an emphasis on simplicity and flexibility so that the researcher can fast prototype of new CNN architecture. It exposes the building blocks of CNNS as easy-to-use MATLAB functions, and provide highly optimized CUDA routines for computing linear convolutions, pooling, batch normalization, etc. MatConvNet is proven very helpful in getting proficient MATLAB user to get started with CNN.

What it contained:

The code follows the file structure inside MatConvNet , copy the files into the corresponding MatConvNet folders.

1. Matlab implementation of the PhaseSplit layer, Abs and Tanh layer.

matconvnet-1.0-beta20\matlab\vl\_nnabs.m

matconvnet-1.0-beta20\matlab\vl\_nntanh.m

matconvnet-1.0-beta20\matlab\vl\_nnphasesplit.m

matconvnet-1.0-beta20\ +dagnn\Abs.m

matconvnet-1.0-beta20\+dagnn\TanH.m

matconvnet-1.0-beta20\+dagnn\PhaseSplit.m

In addition, the MATLAB file of BatchNorm.m is also modified to help with refining the batch normalization moments after training as in [1]

matconvnet-1.0-beta20\+dagnn\BatchNorm.m

The following is the unit test file for the Abs, TanH, and PhaseAware Layer.

matconvnet-1.0-beta20\matlab\xtest\suite\ nnabs.m

matconvnet-1.0-beta20\matlab\xtest\suite\ nnphasesplit.m

matconvnet-1.0-beta20\matlab\xtest\suite\ nntanh.m

1. Creating DagNN MatConvNet module for the PhaseAware PNet and VNet as in [1].

matconvnet-1.0-beta20\examples\PhaseAwareNet\cnn\_phaseaware\_PNet\_init.m

matconvnet-1.0-beta20\examples\PhaseAwareNet\ PhaseAware\_PNet\_Config.png

matconvnet-1.0-beta20\examples\PhaseAwareNet\ cnn\_phaseaware\_VNet\_init.m

matconvnet-1.0-beta20\examples\PhaseAwareNet\ PhaseAware\_VNet\_Config.png

A full MatConvNet examples of creating database, training the net, refining batch normalization moment, and testing the net are listed in the following

**Create the database**

matconvnet-1.0-beta20\examples\PhaseAwareNet\cnn\_phaseaware\_imdb\_setup.m

**Training PNet or VNet**

matconvnet-1.0-beta20\examples\PhaseAwareNet\cnn\_phaseaware.m

**Post-refine batch normalization**

matconvnet-1.0-beta20\examples\PhaseAwareNet\bn\_refine\_phaseaware.m

**Testing**

matconvnet-1.0-beta20\examples\PhaseAwareNet\test\_phaseaware.m

Also, the MatConvNet training engine should be updated to support the customized options, and some support functions are created. Copy the following three files as well.

matconvnet-1.0-beta20\examples\cnn\_bnrefine\_dag.m

matconvnet-1.0-beta20\examples\ cnn\_test\_dag.m

matconvnet-1.0-beta20\examples\ cnn\_train\_dag.m

matconvnet-1.0-beta20\matlab\+dagnn\fromSimpleNN.m

REFERENCES

[1] JPEG-Phase-Aware Convolutional Neural Network for Steganalysis of JPEG Images, with Mo Chen, M. Boroumand, and V. Sedighi, 5th IH&MMSec. Workshop, Philadelphia, PA, June 20-22, 2017.

[2] A. Vedaldi and K. Lenc, *Caffe: MatConvNet - Convolutional Neural Networks for MATLAB*. Proc. of the ACM Int. Conf. on Multimedia, 2015.