Homework set Part 3 on MNIST
Tensorflow 2

Guidelines

- The solution for this homework is to be posted as a .pdf file.

- All plots must have named axis, grids and title. If more than one plot is on the same figure, provide legend.

1 Introduction

In this homework, we delve into implementing models in Tensorflow 2 (TF2). Unlike the previous exercise, where we used numpy to implement the model and the differentiation, in TF2 the differentiation is done automatically. To understand how TF2 works, you need to under stand the concept of computational graphs - and how TF uses them to build input pipelines, computation models (neural networks), etc. For that purpose, a series of useful links are given from TF website.

2 Useful Links

Read all and implement 1-2 by your own (NO COPY PASTE) the content in the following links:

1. Image classification over Fashion MNIST

2. Basic input pipeline

3. Customization Basics

4. Custom Layers

5. Custom training 1, Custom training 2

6. Keras overview

7. Keras functional API

8. Keras training and evaluation

3 MNIST state of the art

Now use your accumulated experience with TF and your imagination to get the best model performance (in terms of test accuracy/cross-entropy) with minimum training time and number of parameters. The performance is more important than the training time/number of parameters, i.e training time and number of parameters are taken into account only if two models have the same performance.

Submission

The work in this assignment should be summarized into a pdf document, where you present the exercises from TF website and the results from section 3. Use you experience until now to think of visualizations that you could use to give sense of your model's behavior. The figure you present should convince confidently that your model works. Choosing the right figures is up to you!

GOOD LUCK!!!