Introduction to Data Science
– week 4 exercises –

Instructions

For this week's deep learning exercises we will use the CSC computing environment. Follow the instructions below to find and complete the exercises on CSC:

- Start by going to the CSC notebooks. Choose the **Haka login** option and log in using your **University credentials**.
- Find the environment for the course *'Course Practical Deep Learning 2020'*, and choose *'Launch new'*. After a few seconds, the option will appear to *'Open in browser'*. This will open a new instance of a Jupyter environment.
- **Warning:** each instance in the environment has a 'lifetime' of **10 hours**. Remember to **save** and **download** the Jupyter notebook(s) you have been working on, before your progress is lost. You can then open a new instance, **upload** your notebook and continue working from where you left off.

Exercises

We will work on two different approaches – two different neural networks that is – for a classification task on the **Fashion MNIST** data.

Once you are in the *'Course Practical Deep Learning 2020'* environment, for each exercise, use the following notebook file:

1. **Multi-layer Perceptron (MLP):** Open the Jupyter notebook file *'02-tf2-mnist-mlp.ipynb'*.
2. **Convolutional Neural Network (CNN):** Open the Jupyter notebook file *'03-tf2-mnist-cnn.ipynb'*.

Follow the examples and complete the tasks using the Fashion MNIST data (not the MNIST digit dataset we used last week). You can load the Fashion MNIST dataset using:

```
from tensorflow.keras.datasets import fashion_mnist
data = fashion_mnist.load_data()
```

In the 'Parameter tuning' tasks, feel free to experiment with different parameters, optimizers and activation functions for your networks – you will find useful links in the notebooks. **Finally, remember to download your two completed notebooks and upload them on Moodle.**