Teachers: J. Hennebert, M. Melchior
Assistants: Y.-I. Beffa, S. Hackstein, O. Zayene

Practical Work 05 – 24/03/2022
Optimisers

Objectives

The main objective of this (a bit shorter) PW is to explore the behavior of the different optimisers for training and to implement a learning rate schedule. Learn also how to set up and use "Tensorboard" or "Weights and Biases".

Submission

— **Deadline** : Wednesdays 6th April, noon

— **Format** : ipynb

Exercise 1 Characteristics of Optimisers with 2d Example

Analyse the optimisation paths of the optimisers discussed in the lecture by using a 2d example, i.e. SGD, Momentum, Momentum with Nesterov, RMSprop, Adam.

Use the utilities and instructions in the notebook `PW05_optimisers_2d_example_stud.ipynb`.

Exercise 2 Comparison of Optimisers with MLP for FashionMNIST Classification

In this exercise, you use one of the previous MLP implementations to classify Fashion MNIST image - but no longer just use SGD but try to improve the speed in training with other optimisers, specifically with SGD, Momentum, Momentum with Nesterov, RMSprop, Adam.

Use the notebook `PW05_optimisers_FashionMNIST_stud.ipynb` as skeleton.

Exercise 3 Integrate with Monitoring Tool

Select one of the proposed monitoring tools, i.e. Weights & Biases or Tensorboard and bring yourself up to speed in using them. There are many different resources available on the web that instruct you how to integrate with them, e.g. Weights & Biases or Tensorboard.

Use the selected tool for getting an overview on the results obtained in the previous exercise.