Assignments

Assignment 1

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🕐 Due 3 March at 11:59 PM

Assignment 1: ANN fundamentals on a fashion dataset

For this assignment, you will work with an MNIST-style dataset (using small black and white fashion pictures instead of the "traditional" handwritten digits). See here for more information on the data set.

- Construct an MLP neural network using Keras to predict on this data set
- Make sure to get a good accuracy (>85% is what you should aim for). Experiment with the hyper parameters discussed in class (learning rate, optimizer, etc.)
- In Keras, the data set can be easily loaded in by following these instructions. The label names corresponding with the different classes are also provided there
- Try to verify whether your model could deal with rotated (e.g. upside down) images, very zoomed in or zoomed out ones (it's fine if it can't)
- Also try to identify those images your model was most convinced about or most confused: can you find weak spots or opportunities to improve based on this?

Your report should contain a brief overview of: (at least) your final architecture, evaluation results, what you experimented with, and other questions mentioned above. Don't write filler pages full of text but keep it to the point. Submitting a Jupyter Notebook as a "report" including both code and text is also fine, but do make sure it is readable top-to-bottom.

The source web page also contains a lot of benchmarks with approaches others have tried. You're of course free to take a look at this to get some ideas, but make sure you know and can explain what you're doing (and that it really improves your results). E.g. most of the architectures are CNN whereas it's fine to focus squeezing as much as you can out of MLP here.

Deadline: 03/03 - groups should upload their report and accompanying code.