

Assignment 5

April 30, 2021

Question 1: 20 points

- Train a deep MLP on the MNIST dataset.
- You can load it with `keras.datasets.mnist.load_data()`
- Try to achieve at least 98% accuracy tweaking the architecture and hyperparameters like learning rate, batch size, etc.
- Try using randomized grid search.
- Use checkpoints, use early stopping.
- Plot learning curves using TensorBoard.
- Plot the network architecture.

Requirements

These are the general rules for submitting the homework not only for this assignment.

1. Submit jupyter notebook(s) in ipynb and html formats: html format allows the grader to easily read it in canvas while ipynb allows to execute it if something is not clear from html.
2. The notebook should be well formatted:
 - Use markdown to break it into sections, bullet points, etc.
 - See `11_n3.ipynb` for example how to use it.
 - If you double click on markdown cell, you can see the code.
 - To show the formatted text, execute the corresponding markdown cell.
 - Start the notebook with a markdown title cell of the form:
'# Assignment X, Jane Doe, date'.

- When answering a particular question from the assignment, start the answer with markdown cell
`### Question Y`
that indicates what question you are answering.
3. Name your notebook (and the corresponding html file) according to the following template: `Assignment_X_Jane_Doe.ipynb`
 4. If you are submitting several notebooks, append to the name `'_partZ'` and explain in canvas what each notebook is about.
 5. There should not be any failed cells in the notebook. Every cell should work and have the results of the execution.
 6. The notebook should contain only what is needed to answer a particular question and nothing else. More is as bad as less.
 7. All the plots, if needed for the assignment, should be of production quality with readable labels, titles, etc. Also, try to find the most appropriate type of plot to clearly demonstrate your statement.
 8. Due date: 05/07/2021