Deep Learning for NLP 2020
Home Exercise 05

Due on Monday, 25.05 at 18:00

May 17, 2020

Submission Guidelines for all Home Exercises

- When submitting multiple files, submit one **zip-archive**.
- Submit python code as plain python scripts (**.py**). **Must** be runnable in the given Docker container.
- Submit answers to non-code assignments in **one PDF** file. Scans are permitted, if readable.
- Guidelines specific to neural network code:
  - Please submit your training/testing results (a copy of your console output is fine). Reasoning: Your network might train much slower on the tutor's system than on yours.
  - If you are aware that your network never stops training, please be honest and add a short statement saying so. Thank you!

1 Mandatory Paper (5P)

Read this week's mandatory paper about BERT[1] and answer the following questions:

1. What is the difference between feature-based and fine-tuning pretrained language representations? (1P)
2. State the major architectural improvement of BERT over OpenAI GPT. (1P)
3. Explain the principle of both pre-training objectives used in BERT in two sentences each. (1P)
4. On which families of tasks can BERT be applied? Explain the structure of the input and output of the model for each task. (2P)

2 Dependency Parsing (5P)

1. Draw the two dependency graphs for "`I ate the nice fish with a spoon`", which show the grammatical ambiguity of the sentence. (3P)
2. Give the corresponding `table form` for each of the two graphs as in Slide 30 ("How to deal with conjunctions") in the lecture notes. (2P)

[1] `https://arxiv.org/abs/1810.04805.pdf`