# Problem Set 3
# Deep Learning E1394

Out on Nov 2st, 2023
Due on Nov 21st, 2023, at 23:55

**This problem set is entirely based on coding. Submit any written answers as a pdf typed in LaTeXtogether with your code. Submit one answer per group (as assigned on Moodle) and include names of all group members in the document. Round answers to two decimal places as needed. See "Submission" at the bottom of the problem set for more details.**

## 1 NLP: Translation with a seq2seq Network and Attention

You will build a seq2seq model with an encoder-decoder architecture using attention and self-attention to tackle a NLP translation task.
All implementation tasks are marked by TODO comments and described in more detail in the seq2seq_translation.ipynb template. For some tasks, you may need to elaborate on your implementation. Please do so in the directly in the notebook below the respective implementation task. To give you an overview, the tasks cover the following aspects:

1. Filter data
2. Add a method to a vocabulary class
3. Implement positional encoding
4. Implement an attention layer
5. Loading a transformer and fine-tuning it on your data.

The submission of the whole problem set is done via GitHub classroom. You have to register for the assignment with your GitHub account at `https://classroom.github.com/a/aVmkumDX`. Please make sure that you include your name and your group name in the jupyter notebook (use the exact team name from Moodle).
Make sure to show the notebook output whenever it is indicated.

Please push all solutions to the GitHub repository which was created for your team. The status of your **main** branch at the time of the deadline will be considered in the grading.