



Master Thesis: Deep Learning Optimization Techniques In Natural Language Processing For Process Model Extraction

Description:

Natural language processing greatly profits from deep learning, making extracting declarative process models from text written by domain experts feasible. In recent years innovative network architectures for improving performance in this task were proposed, yet they usually lack proper hyper-parameter tuning.

You will research, categorize and rank common optimization parameters for deep learning with special focus on architectures commonly used in natural language processing. To evaluate your findings, you conduct a hyper-parameter search on a given network architecture to maximize its performance. For running the search, you will research and compare different search algorithms, like grid search, random search or Bayesian optimization.

To compare effects of fine-tuning hyper-parameters against improving the underlying network architecture, you'll design your own novel neural network for this task.

Requirements:

Comprehensive knowledge of Python is required.

A good understanding of natural language concepts, e.g. from taking the DA2 course is helpful. Ideally you are already familiar with deep neural networks, especially recurrent neural networks, autoencoders and convolutional neural networks. It would be nice, if you know how to design, train and evaluate them.

A basic understanding of declarative process modelling is helpful.

If you don't meet the requirements listed above, you're expected to familiarize yourself with them during the span of your master thesis.

Start:

Starting now, or WS20/21

Duration:

6 months

Language:

You can write this thesis in German or English.

Supervisors:

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