Optimization of architecture of deep and recurrent neural networks for natural language processing and modeling

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1. Project Description

Deep and recurrent neural networks are nowadays one of the most successful approaches for various tasks in natural language processing and modeling (syntactic parsing, machine translation, automatic speech recognition, various disambiguation tasks, statistical language modeling). Although this topic is intensely researched worldwide, the application boom is relatively recent, so one can suppose that there is much to do yet. In particular, presently applied architectures of neural networks are proposed ad hoc, and thus are probably suboptimal. It is expected that the successful candidate will work on half-automated optimization of neural network architectures and applying these solutions to several selected tasks in natural language processing and modeling (e.g. morphosyntactic disambiguation, disambiguation of parsing forests, statistical language modeling). The job requires a substantial programming work and understanding of problems of machine learning.

2. Requirements (expectations)

a. M.Sc. of Computer Science, Mathematics or Physics

b. curiosity and research passion

c. ease of programming in imperative languages

d. experience with Linux, Python and GPU

e. elementary knowledge of machine learning, statistics, numerical methods, optimization, and information theory

f. general interest in artificial intelligence and natural language (prior knowledge is not required)

g. Good command of English