

Applying Model-Based Optimization to Hyperparameter Optimization in Machine Learning

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Abstract. This talk will cover the main components of sequential model-based optimization algorithms. Algorithms of this kind represent the state-of-the-art for expensive black-box optimization problems and are getting increasingly popular for hyper-parameter optimization of machine learning algorithms, especially on larger data sets.

The talk will cover the main components of sequential model-based optimization algorithms, e.g., surrogate regression models like Gaussian processes or random forests, initialization phase and point acquisition.

In a second part I will cover some recent extensions with regard to parallel point acquisition, multi-criteria optimization and multi-fidelity systems for subsampled data. Most covered applications will use support vector machines as examples for hyper-parameter optimization.

The talk will finish with a brief overview of open questions and challenges.