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Propositions (Stellingen)

by Patrick Koch, author of

Efficient Tuning in Supervised Machine Learning

1. Efficient tuning in machine learning means to find good-working parameter settings for a learning process within a limited budget. [This thesis]

2. Noisy evaluations in tuning machine learning algorithms can be caused by sampling of the data, the tuning procedure, and the learning algorithm itself. [This thesis]

3. Tuning of learning processes can help to give insights into advantages and disadvantages of pre- and post-processing operators, and the selected learning algorithm. [This thesis]

4. For some datasets, it is possible to find adequate algorithm parameters already with small subsets of the available training data. [This thesis]

5. Strategies, like the re-interpolation of Krigeing models, or averaging over repeated function evaluations, are necessary requirements in the presence of strong noise. [This thesis]

6. Tuned parameters are essential to enable a fair model selection of learning algorithms.

7. Benchmarking learning algorithms must be done carefully, because restricting benchmarks to certain data repositories can be deceptive and can lead to overfitting to the datasets of the repository.

8. The optimization with surrogate models can help in understanding variable interactions of the tunable algorithm.

9. Using sub-samples of the training data can be a solution towards achieving feasible runtimes of learning algorithms. In some cases this only leads to a slight decrease in prediction accuracy.

10. Some people simply start and work on completing things until they are done, while others just wait until they are done by someone else.