

## Master's Thesis (taken)

### A Comparison of Machine Learning Techniques for the On-line Characterization of Tasks executed on Heterogeneous Compute Nodes

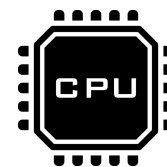
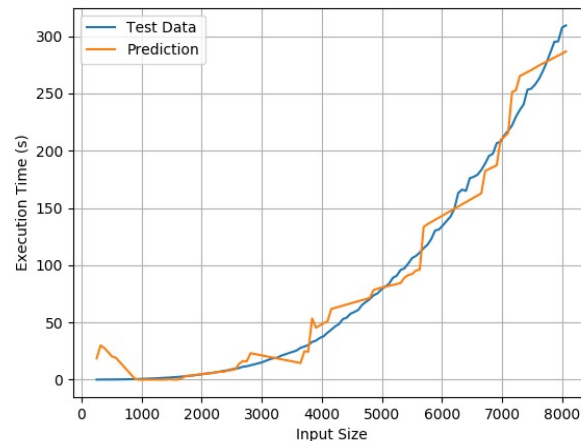
Modern high-performance compute nodes are often equipped with heterogeneous compute resources like CPUs, GPUs and FPGAs. To benefit from their deployment, a suitable schedule must be determined to assign tasks to resources. Typically, modern scheduling heuristics require that the execution times of tasks are known beforehand, which is in general an unrealistic assumption. Thus, the goal of this thesis is to investigate regression techniques regarding their suitability to predict execution times at runtime based on past observations.

#### Type of project

- Study machine learning (ML) and statistical regression techniques suitable for on-line task characterization (e.g. Neural Networks, XCSF, ...)
- Set up experiments and gather measurement data of tasks executed on different resources
- Evaluate and compare the selected regression techniques

#### Prerequisites

- Programming skills, e.g. in Python or a programming language of your choice
- Basic knowledge of statistical and/or ML regression methods is recommended



Supervisor

Tim Hansmeier, O3 116

[tim.hansmeier@uni-paderborn.de](mailto:tim.hansmeier@uni-paderborn.de)

