Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Chair of Computer Science II
University of Würzburg
-
Software Engineering
se.informatik.uni-wuerzburg.de

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Master Thesis

Reliable Resource Demand Estimation

Motivation

Model-based prediction techniques are a powerful tool for proactive performance and resource management of modern data-centers. However, building performance models manually is a complex and time-consuming task requiring extensive experimental analyses. Therefore, a major goal of our research group is the automatic extraction of performance models from monitoring data. A crucial part of performance models are the resource demands describing the resource consumption of a component. There are various approaches to estimate these resource demands with monitoring data, e.g., based on linear regression or stochastic filtering. The accuracy of these approaches heavily depends on the characteristics of the re-source environment, the workload and the measurement data.

Goals

The idea is to develop a novel method that uses a subset of the existing approaches to resource demand estimation and combines the results of the different approaches to one resource demand estimate. The decision how the results of different estimation methods are included in the final estimate should consider the specifics of the resource environment, the workload and the measurement data. The thesis will consist of the following parts: (a) the definition of confidence metrics for resource demand estimates, (b) a decision strategy based on these confidence metrics to select one or more estimation approaches applicable in a certain situation (c) the design and development of a framework that implements the decision strategy, and (d) the evaluation of the combined method to resource demand estimation in a case study. The method will be evaluated in a realistic deployment environment using state-of-the-art virtualization technology from VMware and Java EE technology.

- **Get hands-on experience with practical software performance engineering**
- **Work with state-of-the-art virtualization and Java EE technologies**
- **Excellent working environment and intensive mentoring**

Duration

6 months

Contact

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