



Coping with uncertainty in the evaluation of non-functional properties for software systems

Description

Various techniques to evaluate the performance properties of software systems in early stages of development exist, e.g., based on architectural models enriched by performance-relevant information. However, in early stages, various parameters of the systems are uncertain, e.g., regarding implementation details and environment—including the operational profile. This imposes a challenge on early performance prediction. In the software performance domain, uncertainties concern, for example, the usage profile (including workload intensity, navigational profiles, and input data), resource demand characteristics of software services, and properties of the execution environment (including hardware) on which the software will be deployed. The goal of this seminar topic is to provide a comprehensive overview of research approaches to cope with uncertainty in the evaluation of non-functional properties for software systems, including model-based and measurement-based techniques. As a mandatory part, this topic includes a practical part in which experiments with existing approaches shall be conducted—possibly including novel extensions. While the focus of the paper is on performance, related approaches for other non-functional properties (e.g., reliability) should be included as well. The provided references are to be considered a starting point and it is expected to extend the literature search and present a coherent view on the current state of the art in this area.

References

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