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Measurement-Based Software Performance Engineering for Microservices and Multi-Core Systems

*HPI Future SOC Lab Day
(Fall 2019)*

Project Context and Idea

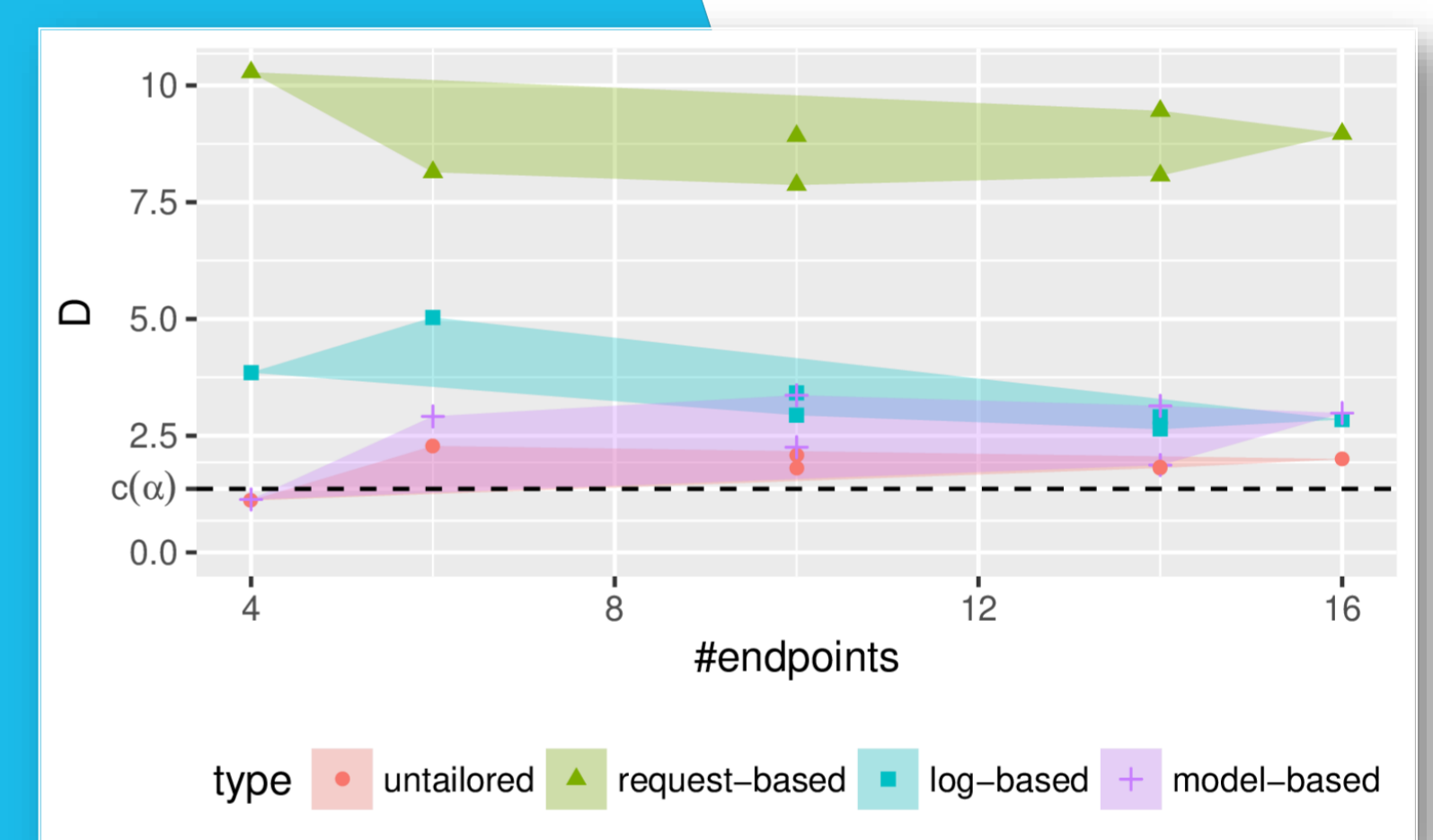
Performance describes the degree to which a software system meets its requirements w.r.t. timeliness and resource usage.

Use of SOC Lab resources for experimental evaluation of novel approaches in the following areas:

1. DevOps-oriented Load Testing for Microservices
2. Performance Engineering for Multi-Core Systems

DevOps-oriented Load Testing for Microservices (Selected Result)

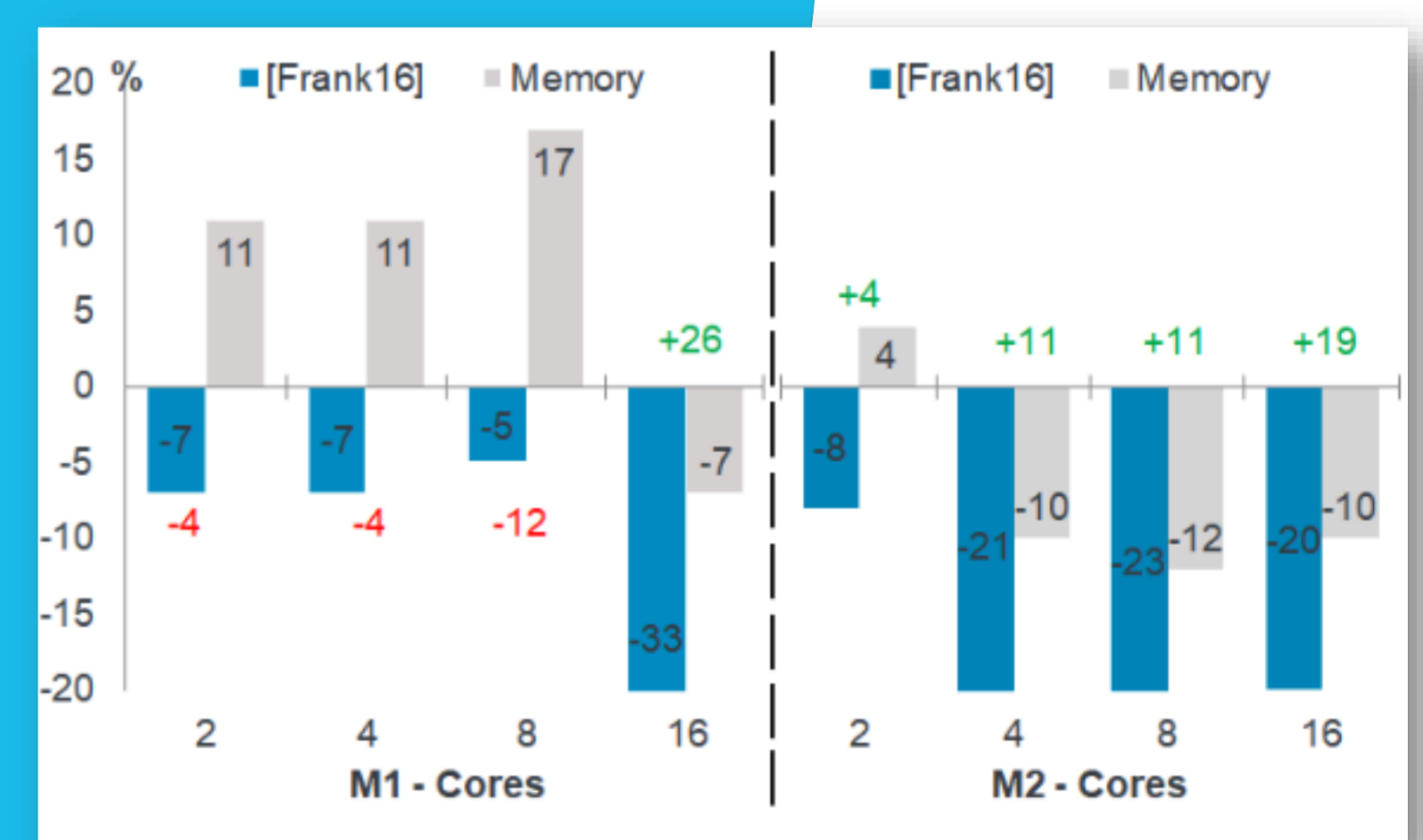
- Goal: extraction of tailored service-level load tests for microservices from system-level production traces
- Experiments in SOC Lab:
 - Docker-based Sock Shop application
 - 1st load tests to simulate and collect production traces
 - 2nd load tests with extracted tailored workloads



(Schulz et al., MASCOTS 2019)

Performance Engineering for Multi-Core Systems (Selected Result)

- Goal: study performance-influencing factors of multi-core systems (e.g., memory) for model-based prediction
- Experiments in SOC Lab:
 - Evaluate accuracy of memory behavior prediction model
 - Experiment runs with different system configurations (e.g., number of cores)



(Gruber and Frank, SSP 2019)

Contact

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<https://www.iste.uni-stuttgart.de/rss/>

- H. Schulz, T. Angerstein, D. Okanović, and A. van Hoorn. *Microservice-tailored Generation of Session-based Workload Models for Representative Load Testing*. MASCOTS 2019
- H. Schulz, T. Angerstein, A. van Hoorn. *Towards automating representative load testing*. LTB@ICPE 2018. ACM
- M. Frank, S. Becker, A. Kaplan, A. Koziolk. *Performance-influencing factors for parallel and algorithmic problems in multicore environments*. ICPE 2019, ACM.
- P. Gruber and M. Frank. *Modelling and Predicting Memory Behavior in Parallel Systems with Network Links—Palladio-based Experiment Report*. SSP 2019