Master’s Thesis
Benchmarking the Performance of Microservices

Context & Problem
Modern microservice-based applications are typically undergoing rapid development cycles with frequent, almost continuous releases. Build processes already comprise aspects such as functional testing (unit tests) or integration testing. However, little emphasis is so far put on testing non-functional properties which is challenging for software components with custom REST-based interfaces. At the same time, qualities like performance, data consistency, or availability are of crucial importance towards the goal of having highly available, responsive applications with expectable behavior for end users.

Approach
This thesis shall develop and prototypically implement an approach for benchmarking microservices, esp. regarding performance. The resulting benchmark tool shall be parameterized with workload descriptions that are based on abstract interaction patterns with REST resources. Building on Swagger/OpenAPI specifications, the tool shall automatically generate the corresponding stubs and execute the abstract workload specifications against concrete microservice instances through these stubs.

Required skills:
Knowledge of REST, microservices, benchmarking, Java programming

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