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## Thesis Advisor Position

**Thesis:** Performance in Software Development Cycle: Regression Benchmarking  
**Author:** Tomáš Kalibera

The thesis is a collection of research papers accompanied by an introduction, a comprehensive research summary and a related work overview. The research presented in the thesis deals with automation of performance evaluation, with the goal of enabling fully automated performance measurement and evaluation during software development. Towards this goal, the thesis presents two contributions, namely a method for conducting performance measurement experiments that allows comparing the observed performance, and an environment for conducting performance measurement experiments that facilitates automating the entire experiment.

Our research group has a history of research in the area of performance evaluation that spans the last ten years and includes cooperation with major research and industrial partners. As our work progressed, we have realized that performance evaluation of software systems is not only more complex than meets the eye, but often also skimmed in necessary scientific rigor. Tomáš Kalibera has worked intensively to help remedy this problem and I would like to highlight three areas of the thesis that I believe present his most significant achievements:


- Understanding the performance of software systems. As the thesis points out, there is a common tendency to underestimate the complexity of software systems. This often leads to designs of performance measurement experiments that are fundamentally flawed in that they cannot, in principle, provide the results that they were intended to collect. The thesis investigates this phenomenon in more depth and proposes guidelines for performance measurement experiments that help avoid this phenomenon.
- Processing the results of performance evaluation. The thesis explains why the general statistical methods are not suited for performance evaluation of software systems and proposes novel statistical methods for this particular purpose. I believe that the absence of applicable statistical methods is one of the major reasons why performance evaluation of software systems has, so far, often neglected proper statistical processing of the results.



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- Applying the work in practical context. The thesis takes care to apply the proposed guidelines and methods not only on simple examples, but also on practical software systems of significant size. This is vital for research work that aspires to be relevant in the fast moving area of software engineering.

To conclude, I believe Tomáš Kalibera has demonstrated significant research achievements in the subject of his research work, backed both by strong publication and citation records and by strong practical application projects. Separately, I would like to add that Tomáš Kalibera has been exemplary in always pushing himself towards higher standards of conduct in his research work. I am honored to recommend that Tomáš Kalibera be granted the doctoral degree.



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