



TECHNISCHE
UNIVERSITÄT
WIEN
Vienna University of Technology



Technische Universität Wien
Compilers and Languages
Argentinertrasse 8
1040 Wien, Österreich

ao.Univ.Prof. Dipl.-Ing. Dr. Andreas Krall

T: +43-1-58801-18511
F: +43-1-58801-18598
andi@complang.tuwien.ac.at
www.complang.tuwien.ac.at/andi/

Oddělení pro vědu a zahraniční styky
Research and International Affairs Department
Matematicko-fyzikální fakulta Univerzity Karlovy
Ke Karlovu 3
121 16 Praha 2
Czech Republic

November 19th 2018

Review of the habilitation thesis *Performance Awareness and Observability on Modern Platforms* by Lubomír Bulej

To whom it may concern.

I have been asked to provide an assessment of the habilitation thesis submitted by Lubomír Bulej. I am an associate professor in computer science at Vienna University of Technology working in the area of compilers with focus on dynamic compilation and virtual machines and therefore an expert in the areas of the thesis. I have been a member of my School's habilitation committee several times. I have not collaborated with Lubomír Bulej himself on either publications or research proposals.

In his first research area *Performance Testing and Performance Awareness*, Lubomír Bulej discusses work around the journal article "Unit Testing Performance with Stochastic Performance Logic" of chapter 3.

The second research area *Performance Aspects of Modern Platforms* is shown by the four articles of chapters 4 to 8 which appeared in highly ranked journals like *Future Generation Computer Systems* and *Software: Practice and Experience* or conferences like *International Conference on Performance Engineering (ICPE)* and *European Conference on Object-Oriented Programming (ECOOP)*. These articles cover different aspects like analyzing CPU pinning, modeling of garbage collection, deoptimization in dynamic compilation and the characterization of managed languages.

In his third research area *Construction of Dynamic Program Analysis Tools*, Lubomír Bulej highlights the topic with his article about modular program analysis tools which appeared at ECOOP again.

The last research area *Observability on Modern Managed Platforms* is shown by the two articles of chapter 9 and 10 which appeared in the prestigious magazine *IEEE Software* and the prestigious *International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)* covering topics like multi-platform dynamic program analysis and



accurate profiling.

From the overall content of the habilitation thesis, as well as the constituent publications, it is evident that Lubomír Bulej has built a significant portfolio of research contributions. His research combines several interesting areas, such as performance aspects and testing, construction of dynamic analysis tools, and modern managed platforms. The problems that Lubomír Bulej outlines have real-world relevance and can be generalized beyond the laboratory environment. The methods that Lubomír Bulej chose for his research are sound and appropriate for the research questions he set out to study.

While academic disciplines differ in their expectation as to what constitutes a "good" research portfolio, I will say that in this instance I am confident that Lubomír Bulej's summarized research contributions meet this bar. They are novel, methodologically sound, and of sufficiently high quality to generate optimism for future research contributions. I consider Lubomír Bulej excellently qualified to be awarded the habilitation degree.

Sincerely,

Andreas Krall