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RE: Assessment of **Dr. Lubomir Bulej** for appointment as Associate Professor
Letter from Prof. Eli Tilevich

To Whom It May Concern:

It is my pleasure to write a letter in **strong support** of Dr. Lubomir Bulej's appointment as an *Associate Professor* at Charles University. I have received and read Dr. Bulej's *Habilitation Thesis*. We have not co-authored any papers or proposal submissions nor worked together on any research.

My review is based upon my knowledge of the field and the thesis manuscript I received from Prof. Roman Barták. To provide some background for this letter, here is a brief summary of my academic career, all of which I have pursued in the United States. I received my Ph.D. from Georgia Tech in 2005 and have been serving on the faculty of the Dept. of Computer Science at Virginia Tech since 2006, currently in the rank of Associate Professor. My research interests lie on the Systems and Programming Languages end of Software Engineering, with a particular emphasis on distributed systems, mobile applications, middleware, software energy efficiency, automated program transformation, and CS education. I have published over 85 refereed research papers on these subjects. My research awards include a Microsoft Research Software Engineering Innovation Foundation Award and an IBM Faculty Award. At Virginia Tech, I lead the Software Innovations lab, whose research projects have been supported both by major government funding agencies and private industry. My recent professional service highlights include heading the Technical Program Committee of *the 15th International Conference on Managed Languages & Runtimes* and serving as General Chair of *the 6th IEEE/ACM International Conference on Mobile Software Engineering and Systems*.

Considering my position and credentials regarding this field of work, I believe I am well qualified to comment on Dr. Bulej's research accomplishments. With regard to scholarship, Dr. Bulej's record is excellent. His work mainly focuses on two broad but related research areas: software performance and dynamic program analysis on managed platforms. The primary applications of his research are large enterprise systems that underlie the operation of many of the key functions of modern society. Software design and optimization challenges, like those addressed in Dr. Bulej's work, are at the heart of most of the grand challenges identified in various academic and industry studies. Hence, his important work has strong potential to have dramatic impact on the performance and utility of computing systems used to support operations of great importance to society.

All the articles that comprise the technical content of Dr. Bulej's habilitation thesis were published in premier venues: *ECOOP (2), OOPSLA, ICPE, ASE Journal, CCGRID, FGCS, IEEE Software*, and *Software: Practice & Experience*. In addition, several of these works were nominated and received awards for their technical quality. For example, Dr. Bulej is the co-author of a paper entitled "Analyzing the Impact of CPU Pinning and Partial CPU Loads on Performance and Energy Efficiency," which was presented at *the 15th IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGRID 2015)*, a premier venue, at which the paper received the Best Paper Runner-Up Award. This work experimentally evaluates partially utilized systems by studying how CPU pinning impacts performance interference and energy efficiency for collocated workloads. One of the major findings of this work is that some uncommon CPU pinning configurations can improve energy efficiency at partial background loads, suggesting how dynamic CPU pinning based on CPU load and workload type can benefit systems that host collocated workloads. This paper, published less than three years ago, has already been cited 24 times as per Google Scholar, indicating this work's strong impact on the research community. Dr. Bulej is also the co-author of a paper entitled "Accurate profiling in the presence of dynamic compilation," which was presented at *the 30th ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2015)*, where the paper received a Distinguished Paper Award. This paper addresses the hard problem of profilers that instrument bytecode reporting incorrect results due to the interference from an optimizing dynamic compiler. This paper presents an elegant solution that informs profilers of how the dynamic compiler optimizes the code. This approach advances the state of the art in performance profiling making it possible to identify complex performance bugs, such as those found in the execution of dynamic compilers. I have seen several successful tenure cases at Virginia Tech and elsewhere, in which candidates did not have any post-Ph.D. work with that many publications in such high quality venues at this point of their careers.

In comparison to other faculty in software systems that have received tenure and promotion recently here at Virginia Tech or other leading public research universities, I would say that Dr. Bulej is comparable to any faculty that went up for tenure in recent years, in terms of scholarship. In summary, based upon my review of his publication record, my knowledge of his contributions to the field of software performance and analysis, I can **recommend without reservation** Dr. Bulej's appointment as an Associate Professor at Charles University.

Please contact me if you have any additional questions.

Sincerely,

Dr. Eli Tilevich
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