Computer Science

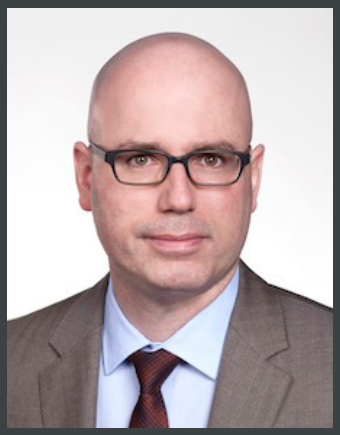
Colloquium

Dr. Felix Wolf
TU Darmstadt, Germany

Date: Wednesday, March 6, 2019
Time: 4:00pm
Location: 2019 Morrill Hall

Lightweight Requirements Engineering for Exascale Co-design

Given the tremendous cost of an exascale HPC system, its architecture must match the requirements of the applications it is supposed to run as precisely as possible. Conversely, applications must be designed such that building an appropriate system becomes feasible, motivating the idea of co-design. In this process, a fundamental aspect of the application requirements are the rates at which the demands for different resources grow as a code is scaled to a larger machine. However, if the anticipated scale exceeds the size of available platforms this demand can no longer be measured. This is clearly the case when designing an exascale system. Moreover, creating analytical models to predict these requirements is often too laborious—especially when the number and complexity of target applications is high. In this paper, we show how automated performance modeling can be used to quickly predict application requirements for varying scales and problem sizes.



Felix Wolf is full professor at the Department of Computer Science of Technische Universität Darmstadt in Germany, where he leads the Laboratory for Parallel Programming. He works on methods, tools, and algorithms that support the development and deployment of parallel software systems in various stages of their life cycle. Prof. Wolf received his Ph.D. degree from RWTH Aachen University in 2003. After working more than two years as a postdoc at the Innovative Computing Laboratory of the University of Tennessee, he was appointed research group leader at Jülich Supercomputing Centre. Between 2009 and 2015, he was head of the Laboratory for Parallel Programming at the German Research School for Simulation Sciences in Aachen and full professor at RWTH Aachen University. Prof. Wolf has published more than a hundred refereed articles on parallel computing, several of which have received awards.

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