A Software Development Methodology for Multicore and Manycore Systems

Friday, 2/24/17 | 11am-12pm | West Hall, W105
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Abstract: The vast amounts of data to be processed by today’s applications demand higher computational power. At the same time, multicore and manycore architectures are becoming increasingly common and ubiquitous. Thus, to meet application requirements and achieve reasonable application performance, it becomes increasingly profitable, or even necessary, to exploit any available hardware parallelism. However, in view of the complexity of developing efficient and portable parallel applications, the parallelization process presents serious economic and technical challenges. In this talk, we propose a set of methods that employ an optimistic approach, which enables programmers to exploit parallelism and develop applications on modern hardware architectures. The goal of our approach is to make semi-automatic parallelization more feasible and attractive for a broader audience of application developers by providing tools and methods that use an optimistic code-based approach and support key activities of the manual parallelization process in a simpler, more effective and intuitive way than existing tools.

Biography: Ali Jannesari is a Senior Research Fellow at University of California, Berkeley. His research mainly focuses on program analysis, parallelism and software engineering, and aims to help application developers to utilize the modern hardware platforms to develop complex software systems in different in-demand areas such as embedded systems, deep learning and parallel systems. He is particularly interested in multicore/manycore systems and utilizing parallel computation for different applications. Ali is also in charge of the Multicore Programming Group (head of the group) at the Laboratory for Parallel Programming at the Technical University of Darmstadt in Germany. He was a junior research group leader at RWTH Aachen University, and a PostDoc fellow at Karlsruhe Institute of Technology and Bosch Research Center. Ali received his PhD degree in computer science from Karlsruhe Institute of Technology in 2010. He’s a member of the IEEE Computer Society and ACM. Contact him at jannesari@eecs.berkeley.edu.