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Mary Hall · Hari Sundar (Eds.)

# Languages and Compilers for Parallel Computing

31st International Workshop, LCPC 2018  
Salt Lake City, UT, USA, October 9–11, 2018  
Revised Selected Papers

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# Preface

This volume contains the papers presented at LCPC 2018: the 31th International Workshop on Languages and Compilers for Parallel Computing, held during October 9–11, 2018, in Salt Lake City, Utah. Since its founding in 1988, the LCPC workshop has been a leading venue for research on parallelizing compilers and related topics in concurrency, parallel languages, parallel programming models, runtime systems, and tools. The workshop spans the spectrum from foundational principles to practical experience, and from early ideas to polished results. LCPC encourages submissions that go outside the scope of scientific computing and enable parallel programming in new areas, such as mobile computing and data centers. The value of LCPC stems largely from its focused topics and personal interaction. This year’s location, in Salt Lake City, Utah, was both scenic and convenient. Fall is beautiful in Utah, and Salt Lake City nestled between the Wasatch and Oquirrh ranges provided a scenic location. Specific topics of LCPC 2018 included: compiling for parallelism and parallel compilers; static, dynamic, and adaptive optimization of parallel programs; parallel programming models and languages; formal analysis and verification of parallel programs; parallel runtime systems and libraries; performance analysis and debugging tools for concurrency and parallelism; parallel algorithms and concurrent data structures; parallel applications; synchronization and concurrency control; software engineering for parallel programs; fault tolerance for parallel systems; and parallel programming and compiling for heterogeneous systems. LCPC received 26 submissions, and each submission was reviewed by at least 3, and on average 3.5, Program Committee members. The committee decided to accept 14 papers, of which 8 are regular papers, 5 are short papers and 1 an invited paper. The workshop program includes 9 invited talks:

1. “The Tensor Algebra Compiler” by Saman Amarasinghe, MIT
2. “Programming Model and Compiler Extensions for Unifying Asynchronous Tasks, Futures, and Events” by Vivek Sarkar, Georgia Tech
3. “The Sparse Polyhedral Framework: Composing Compiler-Generated Inspector-Executor code” by Michelle Strout, Arizona State University
4. “Cache Analysis and Optimization Based on Reuse-time Distribution” by Chen Ding, University of Rochester
5. “New Opportunities for Compilers in Computer Security” by Alex Viedenbaum, University of California, Irvine
6. “Putting Parallelizing Compilers into the Toolbox of Computational Scientists” by Rudi Eigenmann, University of Delaware
7. “Quantifying and Reducing Execution Variance in STMs via Model Driven Commit Optimization” by Santosh Pande, Georgia Tech
8. “UPC++” by Scott Baden, UC San Diego
9. “Tuning without Auto-Tuning” by Martin Kong, Stonybrook University

We would like to thank the School of Computing staff for the help in organizing the workshop and the financial support from Microsoft and Intel. The generation of the proceedings was assisted by the EasyChair conference system.

December 2018

Mary Hall  
Hari Sundar

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# Contents

A Unified Approach to Variable Renaming for Enhanced Vectorization . . . . .	1
<i>Prasanth Chatarasi, Jun Shirako, Albert Cohen, and Vivek Sarkar</i>	
Design and Performance Analysis of Real-Time Dynamic Streaming Applications . . . . .	21
<i>Xuan Khanh Do, Stéphane Louise, and Albert Cohen</i>	
A Similarity Measure for GPU Kernel Subgraph Matching. . . . .	37
<i>Robert Lim, Boyana Norris, and Allen Malony</i>	
New Opportunities for Compilers in Computer Security. . . . .	54
<i>Junjie Shen, Zhi Chen, Nahid Farhady Ghalaty, Rosario Cammarota, Alexandru Nicolau, and Alexander V. Veidenbaum</i>	
Footmark: A New Formulation for Working Set Statistics . . . . .	61
<i>Liang Yuan, Wesley Smith, Sicong Fan, Zixu Chen, Chen Ding, and Yunquan Zhang</i>	
Towards an Achievable Performance for the Loop Nests . . . . .	70
<i>Aniket Shivam, Neftali Watkinson, Alexandru Nicolau, David Padua, and Alexander V. Veidenbaum</i>	
Extending Index-Array Properties for Data Dependence Analysis . . . . .	78
<i>Mahdi Soltan Mohammadi, Kazem Cheshmi, Maryam Mehri Dehnavi, Anand Venkat, Tomofumi Yuki, and Michelle Mills Strout</i>	
Optimized Sound and Complete Data Race Detection in Structured Parallel Programs . . . . .	94
<i>Kyle Storey, Jacob Powell, Ben Ogles, Joshua Hooker, Peter Aldous, and Eric Mercer</i>	
Compiler Optimizations for Parallel Programs. . . . .	112
<i>Johannes Doerfert and Hal Finkel</i>	
MATE, a Unified Model for Communication-Tolerant Scientific Applications . . . . .	120
<i>Sergio M. Martin and Scott B. Baden</i>	
GASNet-EX: A High-Performance, Portable Communication Library for Exascale . . . . .	138
<i>Dan Bonachea and Paul H. Hargrove</i>	

[Nested Parallelism with Algorithmic Skeletons . . . . .](#)    159  
    *Alireza Majidi, Nathan Thomas, Timmie Smith, Nancy Amato,*  
    *and Lawrence Rauchwerger*

[HDArray: Parallel Array Interface for Distributed Heterogeneous Devices . . .](#)    176  
    *Hyun Dok Cho, Okwan Kwon, and Samuel P. Midkiff*

[Automating the Exchangeability of Shared Data Abstractions . . . . .](#)    185  
    *Jiange Zhang, Qian Wang, Qing Yi, and Huimin Cui*

[Author Index . . . . .](#)    193