

Preface

This volume presents the papers accepted for the 28th International Workshop on Languages and Compilers for Parallel Computing (LCPC), held during September 9–11, 2015, in Raleigh, North Carolina, USA. Following a long tradition, LCPC 2015 offered a valuable forum for sharing research on all aspects of concurrency: parallel languages, parallel programming models, compilers, runtime systems, and tools. LCPC 2015 in addition encouraged work that went beyond the scope of scientific computing and enabled parallel programming in new areas, such as mobile computing and data centers.

LCPC 2015 received 44 abstract submissions, 37 of which turned into full submissions. Each full submission received three independent reviews from the Program Committee, and some submissions received an additional review from an external expert reviewer. The Program Committee met to discuss each of the full submissions, and decided to accept 19 regular papers. The accepted papers cover a range of important topics on parallel computing, including programming models, communication and latency, optimizing frameworks, parallelizing compilers, correctness and reliability, applications and data structures. LCPC 2015 additionally included four posters on preliminary research results and reflection of past experiences.

LCPC 2015 was fortunate to include two keynote talks. Paul H.J. Kelly from Imperial College, London, gave a talk titled “Synthesis Versus Analysis: What Do We Actually Gain from Domain-Specificity?” Kelly reflected on the extensive experiences that he and his collaborators had in domain-specific performance optimizations, and offered a series of insights on the profitability of domain-specific optimizations. The second talk, presented by Padma Raghavan from Pennsylvania State University, was titled “Toward Programming Models for Parallel Processing of Sparse Data Sets.” Raghavan discussed the utilization of fine-grain parallelism while reducing the latencies of data accesses for data sets with many dimensions that are sparse.

LCPC 2015 held a panel on “Implications of Emerging Memory Technology (e.g., Persistent Memory, Stacked Memory, Processing in Memory) to the Research on Compilers and Programming Systems.” The panelists include five experts on the topic: Dhruva R. Chakrabarti from HP Labs, Rudolf Eigenmann from Purdue University, David Padua from UIUC, Yan Solihin from NCSU, and Youtao Zhang from the University of Pittsburgh. The panel stimulated discussions on the new challenges and opportunities that emerging memory technology brings to compilers and programming systems research.

We would like to thank all the participants of LCPC 2015 for making it a success. The hard work by the Program Committee and external reviewers in reviewing the submissions is key to ensuring a high-quality technical program. We are indebted to the Steering Committee for the strong support. We give our special thanks to Lawrence Rauchwerger for helping us with the workshop registration and many other organizational issues. We are grateful for the financial support by Cisco, Huawei, Intel,

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Xipeng Shen
Frank Mueller
James Tuck

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