

15-745 Optimizing Compilers, Spring 2016

Papers for In-Class Discussions

Compiler-Assisted Debugging

- Oswaldo Olivo, Isil Dilling, and Calvin Lin. “*Static Detection of Asymptotic Performance Bugs in Collection Traversals*,” in *Proceedings of the 36th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '15)*, June 2015.
- Brandon Lucia and Luis Ceze. “*Data Provenance Tracking for Concurrent Programs*,” in *Proceedings of the 2015 International Symposium on Code Generation and Optimization (CGO '15)*, February 2015.
- Sanket Tavarageri, Sriram Krishnamoorthy, and P. Sadayappan. “*Compiler-Assisted Detection of Transient Memory Errors*,” in *Proceedings of the 35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '14)*, June 2014.

Pointer Analysis

- Yusheng Weijiang, Shruthi Balakrishna, Jianqiao Liu, and Milind Kulkarni. “*Tree Dependence Analysis*,” in *Proceedings of the 36th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '15)*, June 2015.
- Yannis Smaragdakis, George Kastrinis, and George Balatsouras. “*Introspective analysis: context-sensitivity, across the board*,” in *Proceedings of the 35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '14)*, June 2014.
- Xiao Xiao, Qirun Zhang, Jinguo Zhou, and Charles Zhang. “*Persistent pointer information*,” in *Proceedings of the 35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '14)*, June 2014.

Cache Optimizations

- Wei Ding, Xulong Tang, Mahmut Taylan Kandemir, Yuanrui Zhang, and Emre Kultursay. “*Optimizing Off-Chip Accesses in Multicores*,” in *Proceedings of the 36th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '15)*, June 2015.
- Hee-Seok Kim, Izzat El Hajj, John Stratton, Steven Lumetta and Wen-mei Hwu. “*Locality-Centric Thread Scheduling for Bulk-synchronous Programming Models on CPU Architectures*,” in *Proceedings of the 2015 International Symposium on Code Generation and Optimization (CGO '15)*, February 2015.
- Kevin Stock, Martin Kong, Tobias Grosser, Louis-Nol Pouchet, Fabrice Rastello, J. Ramanujam, and P. Sadayappan. “*A framework for enhancing data reuse via associative reordering*,” in *Proceedings of the 35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '14)*, June 2014.

Optimizations for Dynamic Languages (e.g., JavaScript)

- Kyle Dewey, Vineeth Kashyap, and Ben Hardekopf. “*A Parallel Abstract Interpreter for JavaScript*,” in *Proceedings of the 2015 International Symposium on Code Generation and Optimization (CGO'15)*, February 2015.
- Wonsun Ahn, Jiho Choi, Thomas Shull, Mara J. Garzarn, and Josep Torrellas. “*Improving JavaScript performance by deconstructing the type system*,” in *Proceedings of the 35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '14)*, June 2014.

- Igor Costa, Pericles Alves, Henrique Nazare Santos, Fernando Magno Quintao Pereira. “*Just-in-Time Value Specialization*,” in *Proceedings of the 2013 International Symposium on Code Generation and Optimization (CGO '13)*, February 2013.

Dynamic Optimization

- Byron Hawkins, Brian Demsky, Derek Bruening and Qin Zhao. “*Optimizing Binary Translation of Dynamically Generated Code*,” in *Proceedings of the 2015 International Symposium on Code Generation and Optimization (CGO '15)*, February 2015.
- Tiark Rompf, Arvind K. Sujeeth, Kevin J. Brown, HyoukJoong Lee, Hassan Chafi and Kunle Olukotun. “*Surgical precision JIT compilers*,” in *Proceedings of the 35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '14)*, June 2014.
- Michael R. Jantz and Prasad A. Kulkarni. “*Exploring single and multilevel JIT compilation policy for modern machines*,” in *ACM Transactions on Architecture and Code Optimization (TACO)*, 10(4), Article 22, December 2013.

Compiler Support for Approximate Computing

- Simone Campanoni, Glenn Holloway, Gu-Yeon Wei, and David Brooks. “*HELIX-UP: Relaxing Program Semantics to Unleash Parallelization*,” in *Proceedings of the 2015 International Symposium on Code Generation and Optimization (CGO '15)*, February 2015.
- Eric Schkufza, Rahul Sharma, and Alex Aiken. “*Stochastic optimization of floating-point programs with tunable precision*,” in *Proceedings of the 35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '14)*, June 2014.
- Mehrzad Samadi, Davoud Anoushe Jamshidi, Janghaeng Lee, and Scott Mahlke. “*Paraprox: pattern-based approximation for data parallel applications*,” in *Proceedings of the nineteenth international conference on Architectural support for programming languages and operating systems (ASPLOS)*, March 2014.

Compiling for GPUs and Vectors

- Bin Ren, Youngjoon Jo, Sriram Krishnamoorthy, Kunal Agrawal, and Milind Kulkarni. “*Efficient Execution of Recursive Programs on Commodity Vector Hardware*,” in *Proceedings of the 36th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '15)*, June 2015.
- Cedric Nugteren and Henk Corporaal. “*Bones: An Automatic Skeleton-Based C-to-CUDA Compiler for GPUs*,” in *ACM Transactions on Architecture and Code Optimization (TACO)*, 11(4), Article 35, December 2014.
- Rajkishore Barik, Rashid Kaleem, Deepak Majeti, Brian T. Lewis, Tatiana Shpeisman, Chunling Hu, Yang Ni, and Ali-Reza Adl-Tabatabai. “*Efficient Mapping of Irregular C++ Applications to Integrated GPUs*,” in *Proceedings of Annual IEEE/ACM International Symposium on Code Generation and Optimization (CGO '14)*, February 2014.

Optimizing Scientific Codes

- Pavel Panchekha, Alex Sanchez-Stern, James R. Wilcox, and Zachary Tatlock. “*Automatically Improving Accuracy for Floating Point Expressions*,” in *Proceedings of the 36th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '15)*, June 2015.
- Anand Venkat, Mary Hall, and Michelle Mills Strout. “*Loop and Data Transformations for Sparse Matrix Code*,” in *Proceedings of the 36th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '15)*, June 2015.
- Wai Teng Tang, Ruizhe Zhao, Mian Lu, Yun Liang, Huynh Phung Huynh, Xibai Li, and Rick Siow Mong Goh. “*Optimizing and Auto-Tuning Scale-Free Sparse Matrix-Vector Multiplication on Intel Xeon Phi*,” in *Proceedings of the 2015 International Symposium on Code Generation and Optimization (CGO '15)*, February 2015.