



Jason Mars

Curriculum Vitae

Research Interests

Cross-layer system designs for end-to-end artificial intelligence in both software and hardware, **datacenter and warehouse-scale computer architecture for scalable AI**, and **hardware / software co-design** focused on optimizing latency, energy efficiency, and system utilization, particularly in the context of the latest innovations in AI, microarchitectural design, runtime systems, and cloud computing.

Faculty Appointments

- 2013–Present **Assistant Professor**, *The University of Michigan*, Ann Arbor, Department of Electrical Engineering and Computer Science (EECS).
- 2012–2013 **Assistant Professor**, *The University of California*, San Diego, Department of Computer Science and Engineering (CSE).
Peggy and Peter Preuss Faculty Scholar

Entrepreneurship and Industry Appointments

- 2015–Present **Co-founder and CEO**, *Clinic, Inc.*, HQ in Ann Arbor, MI, Commercializing worlds most sophisticated platform for Conversational AI.
100 Employees, \$7.5 Million Funding, \$10 Million 2017 - 2018 Revenue
- 2015–Present **Advisory Board Member**, *Trove, Inc.*, HQ in Ann Arbor, MI, Combining AI and Graph Theory to provide platform for Networking.
CEO: Guy Suter
- 2018–Present **Director Board Member**, *Medical Memory, LLC.*, HQ in Pheonix, AZ, Providing AI platform and ecosystem to support medical doctors.
CEO: Kevin Gadawski

Education

- 2006–2012 **Ph.D. in Computer Science**, *The University of Virginia*, Charlottesville, Virginia.
◦ Dissertation: *Rethinking the Architecture of Warehouse-Scale Computers*
- 2006–2008 **M.S. in Computer Science**, *The University of Virginia*, Charlottesville, Virginia.
◦ Thesis: *General Pattern Based Prediction For Online Optimizations and Runtime Adaptation*
- 2001–2005 **B.S. in Computer Science**, *The University of Pittsburgh*, Pittsburgh, Pennsylvania.

Honors and Awards

- 2017 **#2 Most Innovative CEO in Banking 2017** (Bank Innovation)

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2016	ISCA Hall of Fame	(Top Venue in Architecture)
2015	NSF CAREER Award	(Frist Attempt)
2013	Google Faculty Research Award	(\$50k Gift Funding)
2012	Preuss Faculty Scholar Appointment	(\$125k Endowment)
2012	UVA Research Award	(\$400 Cash Prize)
2012	Best Paper Award	Code Generation and Optimization (CGO '12)
2012	Best Paper from Computer Architecture Letters	Presented at HPCA '12
2011	Work Selected as IEEE MICRO <i>Top Picks</i>	IEEE MICRO '12
2011	Work Selected as <i>Spotlight Feature</i> by Editorial Board	IEEE CAL '11
2011	Excellent Papers of the Year Recognition	Google's Official Research Blog
2011	Google PhD Fellowship for Compiler Technology	Funding for 3 years / \$105k
2010	Best Presentation Award	Code Generation and Optimization (CGO '10)
2007	Ford Pre-Doctoral Fellowship	Funding for 3 years / \$60k
2007	UNCF Scholarship	\$5k

■ Prior Appointments

- Summer 2013 **Visiting Scientist**, *Google*, Mountain View, California.
- Investigated opportunities to improve efficiency of Google's backend infrastructure and arrived at 4 promising results.
 - *Published - Usenix ATC 2014*
- Summer 2012 **Research Scholar**, *Intel Labs*, Santa Clara, California.
- Designed and prototyped a hw/sw co-designed hybrid approach to unit level power gating.
 - Improvements in energy efficiency of over 20% compared to state of the art techniques.
- Summer 2011 **Research Intern**, *Intel Labs*, Santa Clara, California.
- Designed and prototyped adaptive extension to hw/sw co-designed processors to achieve more efficient hardware atomicity.
 - Can improve performance (IPC) by 1.4x over current state-of-the-art solutions.
 - *Published - ISCA 2012*
- Spring 2011 **Research Intern**, *Google*, Mountain View, California.
- Designed and prototyped Bubble-Up, an approach to enable "safe" co-locations and ultimately improve utilization in warehouse scale computers.
 - Precisely predicts the QoS impact of cross-core interference between co-running jobs with ~1% error.
 - *Published - MICRO 2011, IEEE MICRO Top Picks 2012*
- Summer 2010 **Research Intern**, *Google*, Mountain View, California.
- Designed and prototyped a runtime approach to exploit the platform heterogeneity in current datacenters.
 - Improved datacenter efficiency by up to 16% on real production datacenter workloads.
 - *Published - CAL 2011, ISCA 2013*
- Summer 2009 **Research Intern**, *Google*, Mountain View, California.
- Designed and prototyped contention aware runtime environment to detect and respond to contention due to co-scheduling.
 - Utilization improvements of up to 30% on select benchmarks.
 - *Published - CGO 2010*
- Summer 2008 **Research Intern**, *Google*, Mountain View, California.
- Designed and prototyped compiler technology to dynamically apply aggressive optimizations.
 - Performance improvement of up to 12% on select benchmarks.
 - *Published - CGO 2009*

Impact and Press

- March 2015 **Sirius Open Source Release**, “*An Open End-to-End Intelligent Personal Assistant*”
- <http://sirius.clarity-lab.org>
 - Major Release along with ASPLOS 2015 (Sirius)
 - Downloaded 2420 times in first month
 - Over 100,000 page views in first 2 weeks
- March 2015 **Sirius-Suite Benchmarks Release**, “*Collection of Computational Bottlenecks in Sirius*”
- <http://sirius.clarity-lab.org>
 - Major Release along with ASPLOS 2015 (Sirius)
 - Downloaded 548 times in first month
- March 2015 **Wired Magazine**, “*Voice Control Will Force an Overhaul of the Whole Internet*”
- <http://www.wired.com/2015/03/voice-control-will-force-overhaul-whole-internet/>
 - ASPLOS 2015 (Sirius) paper featured, and interview.
 - Also covered in numerous other outlets
- June 2013 **MIT News**, “*Managing multicore memory*”
- <http://web.mit.edu/newsoffice/2013/managing-multicore-memory-0913.html>
 - Technical interview of colleague’s work.
- June 2013 **The Register**, “*Google boasts of app tuning prowess on ‘warehouse scale clusters*”
- http://www.theregister.co.uk/2013/06/10/google_boasts_of_app_tuning_prowess_on_warehouse_scale_clusters/
 - HPCA 2013 paper featured.
- May 2013 **Wired Magazine**, “*Why Even Google Will Embrace Cellphone Chips in the Data Center*”
- <http://www.wired.com/wiredenterprise/2013/05/google-jason-mars/>
 - ISCA 2013 (Whare-Map) paper featured, and interview.
 - Also covered in ACM Tech News
- May 2013 **Wired Magazine**, “*The Real Reason ARM Will Menace Intel in the Data Center*”
- <http://www.wired.com/wiredenterprise/2013/05/hp-arm-memcached-chip-paper/>
 - Quoted
- Nov. 2012 **SBO in Production GCC 4.8**
- <http://gcc.gnu.org/wiki/FunctionMultiVersioning>
 - CGO 2009 technique (SBO) adapted and integrated into mainline GCC 4.8

Patents Granted

- 2018 **Runtime compiler environment with dynamic co-located code execution**, *United States Patent 9,921,859*.
- Year Granted: 2018
 - Inventors: Jason Mars, Michael Laurenzano, Lingjia Tang
 - Assignee: University of Michigan
 - *Academic Publication - Micro 2014*

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- 2017 **Allocation of tasks in large scale computing systems**, *United States Patent 9,563,532*.
- Year Granted: 2017
 - Inventors: Robert Hundt, Lingjia Tang, Jason Mars
 - Assignee: Google Inc.
 - *Academic Publication - ISCA 2013*
- 2016 **System and methods for sharing memory subsystem resources among datacenter applications**, *United States Patent 9,401,869*.
- Year Granted: 2016
 - Inventors: Lingjia Tang, Jason Mars, Robert Hundt
 - Assignee: Google Inc.
 - *Academic Publication - ISCA 2011*
- 2016 **Cache contention management on a multicore processor based on the degree of contention exceeding a threshold**, *United States Patent 9,268,542*.
- Year Granted: 2016
 - Inventors: Jason Mars, Robert Hundt, Neil A Vachharajani
 - Assignee: Google Inc.
 - *Academic Publication - ISCA 2011*
- 2013 **Scenario Based Optimization**, *United States Patent 8578355*.
- Date Granted: 11/05/2013
 - Inventors: Jason Mars, Robert Hundt
 - Assignee: Google Inc.
 - *Academic Publication - CGO 2009*

Refereed Publications

Conference and Journal Papers

- UIST 2018 Shih-Chieh Lin, Chang-Hong Hsu, Walter Talamonti, Yunqi Zhang, Steve Oney, Lingjia Tang, Jason Mars. Adasa: A Conversational In-Vehicle Digital Assistant for Advanced Driver Assistance Features. *In the Proceedings of the Annual Symposium on User Interface Software and Technology (UIST) 2018*
- NAACL 2018 Yiping Kang, Yunqi Zhang, Jonathan K Kummerfeld, Lingjia Tang, Jason Mars. Data Collection for a Production Dialogue System: A Clinic Perspective. *In the Proceedings of the 2018 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL) 2018*
- ISCA 2018 Animesh Jain, Amar Phanishayee, Jason Mars, Lingjia Tang, Gennady Pekhimenko. Gist: Efficient Data Encoding for Deep Neural Network Training. *In the Proceedings of the 45th Annual International Symposium on Computer Architecture (ISCA) 2018*
- ISCA 2018 Matt Skach, Manish Arora, Dean Tullsen, Lingjia Tang, Jason Mars. Virtual Melting Temperature: Managing Server Load to Minimize Cooling Overhead with Phase Change Materials. *In the Proceedings of the 45th Annual International Symposium on Computer Architecture (ISCA) 2018*
- ASPLOS 2018 Shih-Chieh Lin, Yunqi Zhang, Chang-Hong Hsu, Matt Skach, Md E Haque, Lingjia Tang, Jason Mars. The Architectural Implications of Autonomous Driving: Constraints and Acceleration. *In the 23th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2018*
- ASPLOS 2018 Chang-Hong Hsu, Qingyuan Deng, Jason Mars, Lingjia Tang. SmoothOperator: Combating Power Fragmentation and Improving Power Utilization in Large-scale Datacenters. *In the 23th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2018*

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- PACT 2018 Animesh Jian, Michael Laurenzano, Gilles Pokam, Jason Mars, Lingjia Tang. Architectural Support for Convolutional Neural Networks on Modern CPUs. *In the Proceedings of the International Conference on Parallel Architectures and Compilation (PACT) 2018*
- ISPASS 2018 Ram Kannan, Animesh Jain, Michael Laurenzano, Lingjia Tang, Jason Mars. Proctor: Detecting and Investigating Interference in Shared Datacenters. *In the 2018 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS) 2018*
- MICRO 2017 Parker Hill, Animesh Jain, Mason Hill, Babak Zamirai, Chang-Hong Hsu, Michael A Laurenzano, Scott Mahlke, Lingjia Tang, Jason Mars. DeftNN: Addressing Bottlenecks for DNN Execution on GPUs via Synapse Vector Elimination and Near-compute Data Fission. *In Proceedings of the 50th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO) 2017*
- ISCA 2017 Hailong Yang, Quan Chen, Moeiz Riaz, Zhongzhi Luan, Lingjia Tang, Jason Mars. PowerChief: Intelligent Power Allocation for Multi-Stage Applications to Improve Responsiveness on Power Constrained CMP. *In the Proceedings of the 44th Annual International Symposium on Computer Architecture (ISCA) 2017*
- ASPLOS 2017 Yiping Kang, Johann Hauswald, Cao Gao, Austin Rovinski, Trevor Mudge, Jason Mars, Lingjia Tang. Neurosurgeon: Collaborative Intelligence Between the Cloud and Mobile Edge. *In the 22th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2017*
- ASPLOS 2017 Quan Chen, Hailong Yang, Minyi Guo, Ram Srivatsa Kannan, Jason Mars, Lingjia Tang. Prophet: Precise QoS Prediction on Non-Preemptive Accelerators to Improve Utilization in Warehouse-Scale Computers. *In the 22th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2017*
- MICRO 2016 S Zekany, D Rings, N Harada, M A Laurenzano, L Tang, J Mars. CrystalBall: Statically analyzing runtime behavior via deep sequence learning. *In the 49th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO) 2016*
- MICRO 2016 A Jain, P Hill, S C Lin, M Khan, M E Haque, M A Laurenzano, S Mahlke, L Tang, J Mars. Concise loads and stores: The case for an asymmetric compute-memory architecture for approximation. *In the 49th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO) 2016*
- MICRO 2016 A Jain, M A Laurenzano, L Tang, J Mars. Continuous shape shifting: Enabling loop co-optimization via near-free dynamic code rewriting. *In the 49th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO) 2016*
- ISCA 2016 Michael A. Laurenzano, Jiang Chen, Lingjia Tang, and Jason Mars. HyPR: Identifying and Managing Non-criticality in Units for HW/SW Co-designed Processors. *Proceedings of the 43rd Annual International Symposium on Computer Architecture (ISCA) 2016*
- Acceptance Rate: 19% (To Appear)

- ISCA 2016 Yunqi Zhang, David Meisner, Jason Mars, and Lingjia Tang. Treadmill: Attributing the Source of Tail Latency through Precise Load Testing and Statistical Inference. *In Proceedings of the 43rd Annual International Symposium on Computer Architecture (ISCA) 2016*
 ◦ Acceptance Rate: 19% (To Appear)
- PLDI 2016 Michael A. Laurenzano, Parker Hill, Mehrzad Samadi, Scott Mahlke, Jason Mars, Lingjia Tang. Input Responsive Approximation: Using Canary Inputs to Dynamically Steer Software Approximation. *In the 37th annual ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI) 2016*
 ◦ Acceptance Rate: 16% (To Appear)
- IEEE MICRO Top Picks 2016 Johann Hauswald, Michael A. Laurenzano, Yunqi Zhang, Cheng Li, Austin Rovinski, Arjun Khurana, Ronald G. Dreslinski, Trevor Mudge, Vinicius Petrucci, Lingjia Tang and Jason Mars. Sirius Implications for Future Warehouse Scale Computers *IEEE MICRO, 2016*
 ◦ Top Picks Acceptance Rate: 10% (To Appear)
- ASPLOS 2016 Quan Chen, Hailong Yang, Jason Mars and Lingjia Tang. Baymax: QoS Awareness and Increased Utilization of Non-Preemptive Accelerators in Warehouse Scale Computers. *In the 20th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2016*
 ◦ Acceptance Rate: 19% (To Appear)
- TOCS 2016 Johann Hauswald, Michael A. Laurenzano, Yunqi Zhang, Hailong Yang, Yiping Kang, Cheng Li, Austin Rovinski, Arjun Khurana, Ronald G. Dreslinski, Trevor Mudge, Vinicius Petrucci, Lingjia Tang and Jason Mars. Designing Future Warehouse Scale Computers for Sirius, An End-to-End Voice and Vision Personal Assistant. *In the ACM Transactions on Computer Systems (TOCS) 2016*
 ◦ (To Appear)
- ISCA 2015 Johann Hauswald, Yiping Kang, Michael A. Laurenzano, Quan Chen, Cheng Li, Ronald Dreslinski, Trevor Mudge, Jason Mars, and Lingjia Tang. Djinn and Tonic: DNN as a Service and Its Implications for Future Warehouse Scale Computers. *In Proceedings of the 42nd Annual International Symposium on Computer Architecture (ISCA) 2015*
 ◦ Acceptance Rate: 19%
- ISCA 2015 Matt Skach, Manish Arora, Chang-Hong Hsu, Qi Li, Dean Tullsen, Lingjia Tang, and Jason Mars. Thermal Time Shifting: Leveraging Phase Change Materials to Reduce Cooling Costs in Warehouse-Scale Computers. *In Proceedings of the 42nd Annual International Symposium on Computer Architecture (ISCA) 2015*
 ◦ Acceptance Rate: 19%

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- ASPLOS 2015 Johann Hauswald, Michael A. Laurenzano, Yunqi Zhang, Cheng Li, Austin Rovinski, Arjun Khurana, Ron Dreslinski, Trevor Mudge, Vinicius Petrucci, Lingjia Tang, and Jason Mars. Sirius: An Open End-to-End Voice and Vision Personal Assistant and Its Implications for Future Warehouse Scale Computers. *In Proceedings of the Twentieth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2015*
- Acceptance Rate: 17%
 - **Featured in Wired Magazine Article!**
 - <http://www.wired.com/2015/03/voice-control-will-force-overhaul-whole-internet/>
 - Major Release: <http://sirius.clarity-lab.org>
- HPCA 2015 Chang-Hong Hsu, Yunqi Zhang, Michael A. Laurenzano, David Meisner, Thomas Wenisch, Lingjia Tang, Jason Mars, and Ron Dreslinski. Adrenaline: Pinpointing and Reining in Tail Queries with Quick Voltage Boosting. *In Proceedings of the IEEE 21st International Symposium on High Performance Computer Architecture (HPCA) 2015*
- Acceptance Rate: 22%
- HPCA 2015 Vinicius Petrucci, Michael A. Laurenzano, John Doherty, Yunqi Zhang, Daniel Mosse, Jason Mars, and Lingjia Tang. Octopus-Man: QoS-Driven Task Management for Heterogeneous Multicore in Warehouse Scale Computers. *In Proceedings of the IEEE 21st International Symposium on High Performance Computer Architecture (HPCA) 2015*
- Acceptance Rate: 22%
- PACT 2015 Muneeb Khan, Michael Laurenzano, Jason Mars, Erik Hagersten and David Black-Schaffer. Prefetching for Maximizing Multicore Performance. *In Proceedings of The 24th International Conference on Parallel Architectures and Compilation Techniques? (PACT) 2015*
- Acceptance Rate: 19%
- MICRO 2014 Michael Laurenzano, Yunqi Zhang, Lingjia Tang, Jason Mars. Protean Code: Achieving Near-Free Online Code Transformations for Warehouse Scale Computers. *In Proceedings of The 47th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO) 2014*
- Acceptance Rate: 19%
- MICRO 2014 Yunqi Zhang, Michael Laurenzano, Jason Mars, and Lingjia Tang. SMiTe: Precise QoS Prediction on Real System SMT Processors to Improve Utilization in Warehouse Scale Computers *In Proceedings of The 47th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO) 2014*
- Acceptance Rate: 19%
- USENIX ATC 2014 Yan Zhai, Xiao Zhang, Stephane Eranian, Lingjia Tang, and Jason Mars. HaPPy: Hypertread-aware Power Profiling Dynamically. *In Proceedings of the 2014 USENIX Conference on Annual Technical Conference (USENIX ATC) 2014*
- Acceptance Rate: 15%

- Scientific Programming 2014 Alex Breslow, Ananta Tiwari, Martin Schulz, Laura Carrington, Lingjia Tang and Jason Mars. Enabling fair pricing on high performance computer systems with node sharing. *Journal of Scientific Programming 2014*
- SC 2013 Alex Breslow, Ananta Tiwari, Laura Carrington, Lingjia Tang and Jason Mars. Enabling Fair Pricing on HPC Systems with Node Sharing. *In proceedings proceedings of the International Conference on High Performance Computing, Networking, Storage and Analysis (SC) 2013*
- Acceptance Rate: 20%
 - Nominated for Best Paper!
- ISCA 2013 Jason Mars, Lingjia Tang. Heterogeneity in ?Homogeneous? Warehouse-Scale Computers. *In proceedings of the 40th annual International Symposium on Computer Architecture (ISCA) 2013*
- Acceptance Rate: 19%
 - Featured in Wired Magazine Article!
 - <http://www.wired.com/wiredenterprise/2013/05/google-jason-mars/>
- ISCA 2013 Hailong Yang, Alex Breslow, Jason Mars, Lingjia Tang. Bubble-PiPo: Precise Online QoS Management for Increased Utilization in Warehouse Scale Computers. *In proceedings of the 40th annual International Symposium on Computer Architecture (ISCA) 2013*
- Acceptance Rate: 19%
- ASPLOS 2013 Lingjia Tang, Jason Mars, Wei Wang, Tanima Dey, Mary Lou Soffa. ReQoS: Reactive Static/Dynamic Compilation for QoS in Warehouse Scale Computers. *In proceedings of the 18th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2013*
- Acceptance Rate: 23%
- HPCA 2013 Lingjia Tang, Jason Mars, Xiao Zhang, Robert Hagmann, Robert Hundt, Eric Tune. Optimizing Google?s Warehouse Scale Computers: The NUMA Experience. *In proceedings of the 19th IEEE International Symposium on High-Performance Computer Architecture (HPCA) 2013*
- ISCA 2012 Jason Mars, Naveen Kumar. BlockChop: Dynamic Squash Elimination for Hybrid Processor Architecture. *In proceedings of the 39th annual International Symposium on Computer Architecture (ISCA) 2012*
- Acceptance Rate: 17%
- IEEE MICRO Top Picks 2012 Jason Mars, Lingjia Tang, Robert Hundt, Kevin Skadron, Mary Lou Soffa. Increasing Utilization in Warehouse Scale Computers Using Bubble-Up! *IEEE Micro, 2012*
- Top Picks Acceptance Rate: 15%
- CGO 2012 Lingjia Tang, Jason Mars, Mary Lou Soffa. Compiling For Niceness: Mitigating Contention for QoS in Warehouse Scale Computers. *In proceedings of the ACM/IEEE International Symposium on Code Generation and Optimization (CGO) 2012*
- Acceptance Rate: 24%
 - Best Paper Award!

- ISSTA 2012 Kristen Walcott-Justice, Jason Mars, Mary Lou Soffa. THeME: A System for Testing by Hardware Monitoring Events. *In proceedings of the 21st International Symposium on Software Testing and Analysis (ISSTA) 2012*
- Acceptance Rate: 28%
- ISPASS 2012 Wei Wang, Tanima Dey, Jason Mars, Lingjia Tang, Jack Davidson, Mary Lou Soffa. Performance Analysis of Thread Mappings with a Holistic View of the Hardware Resources. *In proceedings of the International Symposium on Performance Analysis of Systems and Software (ISPASS) 2012*
- MICRO 2011 Jason Mars, Lingjia Tang, Robert Hundt, Kevin Skadron, Mary Lou Soffa. Bubble-Up: Increasing Utilization in Modern Warehouse Scale Computers via Sensible Co-locations. *In Proceedings of The 44th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO) 2011*
- Acceptance Rate: 21%
 - Selected as IEEE MICRO Top Picks from 2011!
- ISCA 2011 Lingjia Tang, Jason Mars, Neil Vachharajani, Robert Hundt, Mary Lou Soffa. The Impact of Memory Subsystem Resource Sharing on Datacenter Applications. *In proceedings of the 38th annual International Symposium on Computer Architecture (ISCA) 2011*
- Acceptance Rate: 19%
 - Recognized as one of the Excellent Papers from 2011 by Google
- IEEE CAL 2011 Jason Mars, Lingjia Tang, Robert Hundt. Heterogeneity in ?Homogeneous? Warehouse-Scale Computers: A Performance Opportunity. *IEEE Computer Architecture Letters 2011*
- Acceptance Rate: 24%
 - Selected as the spotlight feature by the editorial board!
 - HPCA 2012 “Best Papers from Computer Architecture Letters!”
- TACO 2011 Jason D. Hiser, Daniel Williams, Wei Hu, Jack W. Davidson, Jason Mars, Bruce R. Childers. Evaluating Indirect Branch Handling Mechanisms in Software Dynamic Translation Systems. *ACM Transactions on Architecture and Compiler Optimization (TACO) 2011*
- ICSE 2011 Mary Lou Soffa, Kristen Walcott, Jason Mars. Exploiting Hardware Advances for Software Testing and Debugging. *In proceedings of the 33rd ACM/IEEE International Conference on Software Engineering (ICSE) 2011*
- NIER Track - Acceptance Rate: 23%
- HiPEAC 2011 Jason Mars, Lingjia Tang, Mary Lou Soffa. Directly Characterizing Cross Core Interference Through Contention Synthesis. *In proceedings of the International Conference on High Performance Embedded Architectures and Compilers (HiPEAC) 2011*
- Acceptance Rate: 23%

- CGO 2010 Jason Mars, Neil Vachharajani, Robert Hundt, Mary Lou Soffa. Contention Aware Execution: Online Contention Detection and Response. *In proceedings of the ACM/IEEE International Symposium on Code Generation and Optimization (CGO) 2010*
- Best Presentation Award
 - Excellent Paper of the Year Recognition by Google
- CGO 2009 Jason Mars, Robert Hundt. Scenario Based Optimization: A Framework for Statically Enabling Online Optimizations. *In proceedings of the ACM/IEEE International Symposium on Code Generation and Optimization (CGO) 2009*
- Integrated in Production GCC 4.8!
 - <http://gcc.gnu.org/wiki/FunctionMultiVersioning>
- MEMOCODE 2009 Daniel Williams, Aprotim Sanyal, Dan Upton, Jason Mars, Sudeep Ghosh, Kim Hazelwood. A Cross-Layer Approach to Heterogeneity and Reliability. *In proceedings of the ACM/IEEE International Conference on Formal Methods and Models for Co-Design (MEMOCODE) 2009*
- CGO 2007 Jason D. Hiser, Daniel Williams, Wei Hu, Jack W. Davidson, Jason Mars, Bruce R. Childers. Evaluating Indirect Branch Handling Mechanisms in Software Dynamic Translation Systems. *In proceedings of the ACM/IEEE International Symposium on Code Generation and Optimization (CGO) 2007*

Book Chapters

- Book Chapter Jason Mars, Lingjia Tang. Understanding Application Contentiousness and Sensitivity on Modern Multicores. *Advances in Computers Vol. 91, 2013*

Workshops and Short Papers

- EXADAPT 2011 Jason Mars, Mary Lou Soffa. Loaf: A Framework and Infrastructure for Creating Online Adaptive Solutions. *ACM SIGPLAN 1st International Workshop on Adaptive Self-Tuning Computing Systems for the Exaflop Era (EXADAPT) @ PLDI 2011*
- EXADAPT 2011 Lingjia Tang, Jason Mars, Mary Lou Soffa. Contentiousness vs. Sensitivity: Improving Contention Aware Runtime Systems on Multicore Architectures *ACM SIGPLAN 1st International Workshop on Adaptive Self-Tuning Computing Systems for the Exaflop Era (EXADAPT) @ PLDI 2011*
- WBIA 2009 Jason Mars, Mary Lou Soffa. Synthesizing Contention. *In proceedings of the Workshop on Binary Instrumentation and Applications (WBIA) @ MICRO 2009*
- SHCMP 2008 Jason Mars, Daniel Williams, Dan Upton, Sudeep Ghosh, Kim Hazelwood. A Reactive Unobtrusive Prefetcher for Multicore and Manycore Architectures. *In proceedings of the Workshop on Software and Hardware Challenges of Manycore Platforms (SHCMP) @ ISCA 2008*

CGO 2008 **Jason Mars, Mary Lou Soffa.** MATS: Multicore Adaptive Trace Selection. *In proceedings of the Third Workshop on Software Tools for MultiCore Systems (STMCS) @ CGO 2008*

Funding Awards and Support

- 2016 – 2017 **PI**, *Ford Motor Company*, \$219,294.
Adasa - Bringing intelligence to smart vehicles
- 2016 – 2021 **PI**, *NSF CAREER:1553485* , \$470,000.
Advancing the Frontier in System Architectures for Artificially Intelligent Services and Applications
- 2015 – 2018 **co-PI**, *NSF VEC:Medium:1539011* , \$1,350,000.
Large-Scale Visual Recognition: From Cloud Data Centers to Wearable Devices
- 2015 – 2018 **co-PI**, *IBM*, \$4,500,000.
Saphire Digital Advisor
- 2014 – 2017 **co-PI**, *NSF XPS:FULL:CCA:1438996* , \$850,000.
Scalable Approximate Computing for Data Parallel Applications
- 2013 – 2016 **PI**, *NSF CCF/SHF:Medium:1302682* , \$750,000.
Bridging the Software / Hardware Gap Towards Efficient, Heterogeneous, and Predictable Data-centers
- 2013 **PI**, *NSF CCF:1342915* , \$14,000.
Student Travel Support for the 2013 IEEE International Symposium on Workload Characterization (IISWC-2013)
- 2013 **PI**, *Google Research Grant*, \$51,500.
Cluster-level and Node-level Management for Efficiency and Predictability in Datacenters
- 2012 **PI**, *Google Research Grant*, \$70,000.
A Performance Aware re-Design of Modern Cloud Platforms

Professional Activities and Service

Steering Committee

- 2015–2018 Elected 3-year term for International Symposium on Code Generation and Optimization (CGO)
- 2017–2020 Appointed to the Steering Committee of the Computing Research Association for Under-represented Minorities and Persons with Disabilities (CRA-URMD)

Program Chair

- 2015 International Symposium on Code Generation and Optimization (CGO)

Editorial Board

- 2012–Present ACM SIGMICRO (Special Interest Group for Computer Microarchitecture)
◦ Online Editor

Program Committee

- ISCA 2016 The 43rd International Symposium on Computer Architecture (ISCA)

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HPCA 2016 IEEE International Symposium On High Performance Computer Architecture (HPCA)
 ISCA 2015 The 42nd International Symposium on Computer Architecture (ISCA)
 HPCA 2015 IEEE International Symposium On High Performance Computer Architecture (HPCA)
 ISPASS 2015 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)
 CGO 2014 ACM/IEEE International Symposium on Code Generation and Optimization (CGO)
 IISWC 2014 IEEE International Symposium on Workload Characterization (IISWC)
 ICS 2014 ACM International Conference on Supercomputing (ICS)
 ICPP 2014 ACM International Conference on Parallel Processing (ICPP)
 MICRO 2013 ACM/IEEE International Symposium on Microarchitecture (MICRO)
 PACT 2013 ACM International Conference on Parallel Arch. and Compilation Techniques (PACT)
 CGO 2013 ACM/IEEE International Symposium on Code Generation and Optimization (CGO)
 SRC 2013 Student Research Competition (SRC)

Referee

Journals ACM Comp. Srv. 2014, TOPC 2014, TACO 2014, ACM Comp. Srv. 2013, TOCS 2013,
 CAL 2013, TACO 2012, IJPEDES 2011
 External Reviewer MICRO 2014, ISCA 2013, HPCA 2013, PACT 2012, HPCA 2012, CGO 2011, PLDI 2010

Conference and Workshop Organization

- 2014 IEEE International Symposium On High Performance Computer Architecture (HPCA)
 - Website Chair
- 2014 ACM/IEEE International Symposium on Microarchitecture (MICRO)
 - Workshops/Tutorials Chair
- 2014 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)
 - Workshops Chair
- 2013 IEEE International Symposium on Workload Characterization (IISWC)
 - Student Travel Grants Chair
- 2012 IEEE International Symposium on Workload Characterization (IISWC)
 - Local Arrangements Chair
- 2012 ACM/IEEE International Symposium on Code Generation and Optimization (CGO)
 - Website Chair
- 2012 The 2nd International Workshop on Adaptive Self-Tuning Computing Systems for the Exaflop Era (EXADAPT)
 - Organizer

- 2011 The ACM SIGPLAN 1st International Workshop on Adaptive Self-Tuning Computing Systems for the Exaflop Era (EXADAPT)
 - o Organizer

Potpourri

- 2015 Invited Participation to NSF Small Panel
- 2014–Present Member of OpenPower Foundation
 - o OpenPower is an open technical membership organization that will enable data centers to rethink their approach to technology.
- 2012 Invited Participation at NSF CSA Workshop
 - o Working group on a community supported computer architecture design and evaluation framework.

Invited Talks and Panels

Keynote Talks

- 2013 **Improving the Efficiency of Multicores in Datacenters** *SICS Multicore Day 2013*

Talks

- 2015 **Sirius: An Open End-to-End Voice and Vision Personal Assistant** *SpeechTEK 2015 in NYC*
- 2015 **Sirius: An Open End-to-End Voice and Vision Personal Assistant** *GCASR at UIC*
- 2014 **Sirius: An Open Intelligent Personal Assistant** *Baidu in China*
- 2014 **Sirius: An Open Intelligent Personal Assistant** *ICT in China*
- 2014 **Doing Amazing Research** *Career Workshop for Women and Minorities in Computer Architecture*
- 2013 **Exploiting Diversity in Warehouse Scale Computers** *Hot Topics in Par. Comp. @ UDelaware*
- 2012 **Re-architecting Warehouse Scale Computers: The Utilization Story** *UC Riverside*
- 2012 **Cloud Platforms: Rethinking Their Design** *Cloud Computing Think Tank (at Gordon Center)*
- 2011 **Attacking Rigidity and Cross-layer Oblivion in the Cloud** *Standord University*
- 2011 **Jumping in to Multicore Research** *CRA-W Multicore Workshop @ ASPLOS 2011*
- 2010 **Online Adaptation for Datacenter Efficiency** *IBM T.J. Watson Labs (Arch. Highlights Series)*
- 2010 **Introduction of Peter Norvig** *Google Inc.*

Panels

- 2013 **Faculty Mentoring Panel** *The IDEA Center's JUMP Program at UCSD*
- 2012 **Cloud Computing Think Tank Panel** *Jacobs School of Engineering (Gordon Center)*

Diversity Activities

- 2014 Invited Speaker at Career Workshop for Women and Minorities in Computer Architecture
- 2014 Served as Tapia 2015 Scholarship Referee

- 2014 Participated in Connecting Inner-City High School Students in Detroit to the University of Michigan MiBytes Program
- 2013 Served as a Member of Executive Diversity Advisory Board for the School of Engineering
- 2013 Worked to Improve Diversity Among Faculty in STEM as a Member of JSOE Hiring Committee
- 2012 Mentor of the UCSD Inclusion Diversity Excellence and Advancement (IDEA) scholars
- 2011 Invited talk at the CRA-W Workshop for Women on Multicore Systems
- 2009 Organizer of Google Disadvantaged and Underrepresented Teen Outreach Program

Teaching

Courses

Fall 2015	EECS 583: Advanced Compilers	~100 Students <i>Excellent Professor Rating: 4.51/5</i>
Winter 2015	EECS 598: Sepcial Topics: Future Architecture	17 Students <i>Excellent Professor Rating: 5/5</i>
Fall 2014	EECS 370: Introduction to Computer Organization	~400 Students <i>Excellent Professor Rating: 4.2/5</i>
Winter 2014	EECS 370: Introduction to Computer Organization	350 Students <i>Excellent Professor Rating: 4.65/5</i>
Fall 2013	EECS 598: Sepcial Topics: Future Architecture	5 Students <i>Excellent Professor Rating: 5/5</i>
Spring 2013	CSE 249A: Seminar on Future Cloud Platforms	12 Students
Winter 2013	CSE 141: Intro. to Computer Architecture	91 Students <i>Eval (Recommend Professor): 92%</i>
Winter 2013	CSE 141L: Intro. to Computer Architecture Laboratory	77 Students <i>Eval (Recommend Professor): 90%</i>

PhDs Graduated

- 2018 Yiping Kang
 - *From Computation to Data: Across-the-stack System Design for Intelligent Applications*
- 2018 Animesh Jain
 - *Addressing Memory Bottlenecks for Emerging Applications*
- 2018 Parker Hill
 - *Bridging the Scalability Gap by Exploiting Error Tolerance for Emerging Applications*
- 2018 Chang-Hong Hsu
 - *Towards Power- and Energy-Efficient Datacenters*
- 2017 Johann Hauswald
 - *System Design for Intelligent Web Services*
- 2016 Michael Laurenzano
 - *Low-overhead Online Code Transformations*

- 2018 Yunqi Zhang
◦ *Architecting Data Centers for High Efficiency and Low Latency*

Dissertation Committees

- 2017 Cao Gao
◦ *Heterogeneous Mobile Platform Characterization and Accelerator Design*
- 2015 Xuejing He
◦ *Energy Saving and Scavenging in Stand-alone and Large Scale Distributed Systems*
- 2015 Daya Shanker Khudia
◦ *Dependable Computing on Inexact Hardware through Anomaly Detection*
- 2015 Faissal Mohamad Sleiman
◦ *Hybrid Designs for Caches and Cores*