Zhijia Zhao

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Education

2010 – 2015	Ph.D. in Computer Science, College of William and Mary Advisor: Prof. *Xipeng Shen*
2007 – 2009	M.S. in Computer Science, Harbin Institute of Technology, China Advisor: Prof. *Quanlong Li*
2003 – 2007	B.S. in Mathematics, Harbin Institute of Technology, China

Professional Experience

2015.7 - current	**University of California, Riverside** Assistant Professor in Computer Science and Engineering Department
2015.5 - 2015.6	**Pacific Northwest National Laboratory** Research Intern
2014.9 - 2015.5	**North Carolina State University** Research Associate
2012.7 - 2012.9	**Mozilla Corporation** Research Engineering Intern

Honors & Awards

2018	Fellow of Hellman Foundation
2018	Best Paper Runner-up Award at MobiSys'18
2018	Regents Faculty Fellowship
2018	NSF CAREER Award
2011	ACM Student Research Competition Silver Medal at PACT'11
2009	Outstanding Graduate, Harbin Institute of Technology
2008	Graduate Fellowship, Harbin Institute of Technology (ranked top 2%)

Research Interests

Programming system support for parallelism, with a focus on automata, graph, and tree-based computations; Program analysis and software reliability

Publications (names of my students are underlined)

ASPLOS'19 Lin Jiang, Xiaofan Sun, Umar Farooq, and **Zhijia Zhao**. Scalable Processing of Contemporary Semi-Structured Data on Commodity Parallel Processors - A Compilation-based Approach. In *Proceedings of the 24th International Conference on Architectural Support for Programming Languages and Operating Systems*, 2019. Acceptance rate: 74/350=21%.

CGO'19 Ruiqin Tian*, Junqiao Qiu*, **Zhijia Zhao**, Xu Liu, and Bin Ren. Transforming Query Sequences for High-Throughput B+ Tree Processing on Many-core Processors. In *Proceedings of International Symposium on Code Generation and Optimization*, 2019. Acceptance rate: 21/69=31%. (*co-primary)

Publications (continued)

MobiSys'18 Umar Farooq and **Zhijia Zhao**. RuntimeDroid: Restarting-Free Runtime Change Handling for Android Apps. In *Proceedings of the 16th ACM International Conference on Mobile Systems, Applications, and Services*, 2018. Acceptance rate: 37/138=26.8%.

ASPLOS'18 Amir Nodehi, Junqiao Qiu, and **Zhijia Zhao**. Tigr: Transforming Irregular Graphs for GPU-Friendly Graph Processing. In *Proceedings of the 23th International Conference on Architectural Support for Programming Languages and Operating Systems*, 2018. Acceptance rate: 56/319=17.5%.

ICS'17 Junqiao Qiu, **Zhijia Zhao**, Bo Wu, Abhinav Vishnu and Shuaiwen Leon Song. Enabling Scalability-Sensitive Speculative Parallelization for FSM Computations. In *Proceedings of the International Conference on Supercomputing*, 2017, 10 pages. Acceptance rate: 28/177=15.8%.

PPoPP'17 Lin Jiang and **Zhijia Zhao**. Grammar-aware Parallelization for Scalable XPath Querying. In *Proceedings of the 22th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*, 2017, pages 371-383. Acceptance rate: 29/132=22%.

PACT'16 Junqiao Qiu, **Zhijia Zhao** and Bin Ren. MicroSpec: Speculation-centric fine-grained parallelization for FSM computations. In *Proceedings of the 25th International Conference on Parallel Architecture and Compilation Techniques*, 2016, pages 221-233. Acceptance rate: 31/119=26%.

ASPLOS'15 **Zhijia Zhao** and Xipeng Shen. On-the-fly principled speculation for FSM parallelization. In *Proceedings of the 20th International Conference on Architecture Support for Programming Languages and Operating Systems*, 2015, pages 619-630. Acceptance rate: 48/278=17.3%.

OOPSLA'14 **Zhijia Zhao**, Bo Wu, Mingzhou Zhou, Yufei Ding, Jianhua Sun, Xipeng Shen, and Youfeng Wu. Call sequence prediction through probabilistic calling automata. In *Proceedings of the ACM International Conference on Object Oriented Programming Systems Languages & Applications*, 2014, pages 745-762. Acceptance rate 52/186=28.0%.

Ubicomp'14 **Zhijia Zhao**, Mingzhou Zhou, and Xipeng Shen. SatScore: Uncovering and avoiding a principled pitfall in responsiveness measurements of app launches. In *Proceedings of the ACM International Joint Conference on Pervasive and Ubiquitous Computing*, 2014, pages 21-32. First-round acceptance rate: 62/454=13.7%.

ASPLOS'14 **Zhijia Zhao**, Bo Wu, and Xipeng Shen. Challenging the "embarrassingly sequential": Parallelizing finite state machine-based computations through principled speculation. In *Proceedings of the 19th International Conference on Architecture Support for Programming Languages and Operating Systems*, 2014, pages 543-558. Acceptance rate: 49/217=22.6%.

ASPLOS'14 Yufei Ding, Mingzhou Zhou, **Zhijia Zhao**, Sarah Eisenstat, and Xipeng Shen. Finding the limit: Examining the potential and complexity of compilation scheduling for JIT-based runtime systems. In *Proceedings of the 19th International Conference on Architecture Support for Programming Languages and Operating Systems*, 2014, pages 607-622. Acceptance rate: 49/217=22.6%.

TACO'13 **Zhijia Zhao**, Michael Bebenita, Dave Herman, Jianhua Sun, and Xipeng Shen. HPar: A practical parallel parser for HTML — taming HTML complexities for parallel parsing. In *ACM Transactions on Code Optimization and Architecture*, 10(4):Article 44, December 2013. (Original work).

Publications (continued)

PPoPP'13 — Bo Wu, **Zhijia Zhao**, Zheng Zhang, Yunlian Jiang, and Xipeng Shen. Complexity analysis and algorithm design for reorganizing data to minimize non-coalesced memory accesses on GPU. In *Proceedings of the 18th ACM Symposium on Principles and Practice of Parallel Programming*, 2013, pages 57-68. Acceptance rate: 26/146=17.8%.

OOPSLA'12 — Bo Wu, **Zhijia Zhao**, Xipeng Shen, Yunlian Jiang, Yaoqing Gao, and Raul Silvera. Exploiting inter-sequence correlations for program behavior prediction. In *Proceedings of the ACM SIGPLAN conference on Systems, Programming, Languages and Applications*, 2012, pages 851-866. Acceptance rate: 59/228=25.9%.

PACT'12 Poster — **Zhijia Zhao**, Bo Wu, and Xipeng Shen. Speculative parallelization needs rigor: Probabilistic analysis for optimal speculation of finite state machine applications. In *Proceedings of the 21st International Conference on Parallel Architecture and Compilation Techniques*, 2012, pages 433-434.

PACT'11 SRC — **Zhijia Zhao**, Bo Wu, and Xipeng Shen. Probabilistic models towards optimal speculation of DFA applications. In *Proceedings of the 20th International Conference on Parallel Architecture and Compilation Techniques*, 2011, page 220. Ranked 2nd/29 submissions.

Grants

2018 – 2021 — NSF SHF: Small: *GPU-dedicated graph transformations for accelerating iterative graph analytics.* $499,987, PI (co-PI: Rajiv Gupta)

2018 – 2023 — NSF CAREER: *Transducerη-centric parallelization for scalable semi-structured data processing.* $461,272, sole-PI

2018 – 2019 — Hellman Foundation: *Grammar-sensitive parallel processing of semi-structured data.* $30,000, sole-PI

2018 – 2019 — Regents Faculty Fellowship: *Characterizing and detecting responsiveness issues of mobile apps caused by runtime changes.* $3,250, sole-PI

2016 – 2019 — NSF CRII: SHF: *FSM-centric approximate computing: a quantitative approach.* $175,000, sole-PI

Teaching

	Course (CS1XX undergrad; CS2XX grad)	Enroll.	Effectiveness (dept. avg.)	Overall (dept. avg.)
2018 Fall	CS180 Introduction to Software Engineering	76	4.21 (4.27)	4.03 (4.15)
2018 Winter	CS201 Compiler Construction	49	4.59 (4.32)	4.46 (4.22)
2018 Winter	CS179K Project in Computer Science (SE)	71	4.49 (4.32)	4.41 (4.22)
2017 Fall	CS180 Introduction to Software Engineering	73	4.43 (4.30)	4.39 (4.20)
2017 Spring	CS260 Seminar on Parallelism Exploitation	8	4.88 (4.25)	4.75 (4.19)
2017 Winter	CS201 Compiler Construction	36	4.59 (4.29)	4.55 (4.19)
2016 Fall	CS180 Introduction to Software Engineering	51	4.47 (4.19)	4.38 (4.10)
2016 Winter	CS201 Compiler Construction	13	4.7 (4.2)	4.5 (4.1)
2015 Fall	CS180 Introduction to Software Engineering	57	4.3 (4.2)	4.3 (4.2)

Invited Talks

2017.11 "*Automata-Centric Parallelization for Scalable and Parallel Data Processing*" at Computer Science Department, University of Rochester, Rochester, New York.

2016.04 "*Challenging the Embarrassingly Sequential': A Principled Approach to Parallelize Finite State Machine*" at Electrical and Computer Engineering Department, University of California, Riverside, Riverside, California.

2015.03 "*Challenging the Embarrassingly Sequential': A Principled Approach to Parallelize Finite State Machine*" at University of Delaware, Newark, Delaware.

2015.01 "*Enabling Parallel Execution and Dynamic Optimizations — A Principled Approach*" at North Carolina State University, Raleigh, North Carolina.

Professional Services

Organizing Committee

ASPLOS'18 Co-Chair for Workshops and Tutorials at *The 23th International Conference on Architectural Support for Programming Languages and Operating Systems*, 2018.

SoCal PLS'17 Co-Chair at The 18th Southern California Programming Languages and Systems Workshop, September 22, 2017.

ICPADS'16 Track Chair at *The 22nd IEEE International Conference on Parallel and Distributed Systems*, December 13-16, 2016.

LCPC'15 Web Chair for *The 28th International Workshop on Languages and Compilers for Parallel Computing*, September 9-11, 2015.

Program Committee

CGO'19 (SRC) Program Committee Member of Student Research Competition at *International Symposium on Code Generation and Optimization*, Washington DC, Feb 16-20, 2019.

ASPLOS'19 (SRC) Program Committee Member of Student Research Competition at *The 24th International Conference on Architectural Support for Programming Languages and Operating Systems*, April 13-17, 2019, Providence, RI.

ISC'19 Program Committee Member of *Artificial Intelligence/Machine Learning track of ISC High Performance conference*, Frankfurt, Germany, June 16-20, 2019.

NPC'18 Program Committee Member of *15th IFIP International Conference on Network and Parallel Computing*, Muroran, Hokkaido, November 29 - December 1, 2018.

HiPC'18 Program Committee Member of *the 25th IEEE International Conference on High Performance Computing, Data, and Analytics*, Bengaluru, India, December, 2018.

ICS'18 (ERC) External Review Committee Member of *the 32nd ACM International Conference on Supercomputing*, June 2018, Beijing, China.

HiPC'17 Program Committee Member of *the 24th IEEE International Conference on High Performance Computing, Data, and Analytics*, Jaipur, India, December 2017.

ACM CF'17 Program Committee Member of *the ACM International Conference on Computing Frontiers 2017*, May 2017, Siena, Italy.

IPDRM'17 Program Committee Member of *the Second Annual Workshop on Emerging Parallel and Distributed Runtime Systems and Middleware*, May 2017

HIPS'17 Program Committee Member of *the 22nd International Workshop on High-Level Parallel Programming Models and Supportive Environments*, May 2017

ICPP'16 Program Committee Member of *the 45th International Conference for Parallel Processing*, Philadelphia PA, August 2016.

Program Committee (continued)

PLDI'16 (SRC and Poster)	Program Committee Member for Student Research Competition and poster selection at *the 37th ACM SIGPLAN conference on Programming Language Design and Implementation*, June 2016.
IPDRM'16	Program Committee Member of *First Annual Workshop on Emerging Parallel and Distributed Runtime Systems and Middleware*, May 2016.

Journal Reviewer

Elsevier JPDC	Journal of Parallel and Distributed Computing, 2018.
IEEE TPDS	IEEE Transactions on Parallel and Distributed Systems, 2017.
IEEE CAL	IEEE Computer Architecture Letter, 2017.
ACM TACO	ACM Transactions on Architecture and Code Optimization, 2015, 2017.
ACM CSUR	ACM Computing Surveys, 2016.
Elsevier PMC	Elsevier Pervasive and Mobile Computing, 2016.
IEEE TC	IEEE Transactions on Computers, 2015.

University and Department Services

2016 – 2019	Graduate Academic Integrity Committee
2016 – 2019	Undergraduate Committee, Computer Science and Engineering Department
2016 – 2018	ACM Student Club Faculty Representative
2017 – 2018	Coach of UCR team for ACM International Collegiate Programming Contest (ICPC)