

Stanford



Alex Aiken

Alcatel-Lucent Professor of Communications and Networking and Professor of Particle Physics and Astrophysics
Computer Science

CONTACT INFORMATION

- **Administrator**

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Bio

BIO

Alex Aiken is the Alcatel-Lucent Professor of Computer Science at Stanford. Alex received his Bachelors degree in Computer Science and Music from Bowling Green State University in 1983 and his Ph.D. from Cornell University in 1988. Alex was a Research Staff Member at the IBM Almaden Research Center (1988-1993) and a Professor in the EECS department at UC Berkeley (1993-2003) before joining the Stanford faculty in 2003. His research interest is in areas related to programming languages.

ACADEMIC APPOINTMENTS

- Professor, Computer Science
- Professor, Particle Physics and Astrophysics
- Member, Bio-X

HONORS AND AWARDS

- Programming Languages Achievement Award, ACM SIGPLAN
- ACM Fellow, ACM
- Phi Beta Kappa Teaching Award, Phi Beta Kappa

PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

PROFESSIONAL EDUCATION

- PhD, Cornell (1988)

LINKS

- <http://theory.stanford.edu/~aiken>: <http://theory.stanford.edu/~aiken>
- Google Scholar: <https://scholar.google.com/citations?hl=en&user=3vKjkoQAAAAJ>

Teaching

COURSES

2022-23

- Mathematical Foundations of Computing: CS 103 (Spr)
- Parallel Computing Research Project: CS 315B (Aut)
- Programming Languages: CS 242 (Aut)

2021-22

- Mathematical Foundations of Computing: CS 103 (Spr)
- Programming Languages: CS 242 (Aut)

2020-21

- Parallel Computing Research Project: CS 315B (Aut)
- Programming Languages: CS 242 (Win)

Publications

PUBLICATIONS

- **Active Learning of Points-To Specifications**
Bastani, O., Sharma, R., Aiken, A., Liang, P.
ASSOC COMPUTING MACHINERY.2018: 678–92
- **Dynamic Tracing: Memoization of Task Graphs for Dynamic Task-Based Runtimes**
Lee, W., Slaughter, E., Bauer, M., Treichler, S., Warszawski, T., Garland, M., Aiken, A., IEEE Press
ASSOC COMPUTING MACHINERY.2018
- **Correctness of Dynamic Dependence Analysis for Implicitly Parallel Tasking Systems**
Lee, W., Stelle, G., McCormick, P., Aiken, A., IEEE
IEEE.2018: 17–24
- **A Distributed Multi-GPU System for Fast Graph Processing** *PROCEEDINGS OF THE VLDB ENDOWMENT*
Jia, Z., Kwon, Y., Shipman, G., McCormick, P., Erez, M., Aiken, A.
2017; 11 (3): 297–310
- **Synthesizing Program Input Grammars**
Bastani, O., Sharma, R., Aiken, A., Liang, P.
ASSOC COMPUTING MACHINERY.2017: 95–110
- **Sound Loop Superoptimization for Google Native Client** *ACM SIGPLAN NOTICES*
Churchill, B., Sharma, R., Bastien, J. F., Aiken, A.
2017; 52 (4): 313-326
- **Integrating External Resources with a Task-Based Programming Model**
Jia, Z., Treichler, S., Shipman, G., Bauer, M., Watkins, N., Maltzahn, C., McCormick, P., Aiken, A., IEEE
IEEE.2017: 307–16
- **Dependent Partitioning** *ACM SIGPLAN NOTICES*
Treichler, S., Bauer, M., Sharma, R., Slaughter, E., Aiken, A.
2016; 51 (10): 344-358
- **Verifying Bit-Manipulations of Floating-Point** *ACM SIGPLAN NOTICES*
Lee, W., Sharma, R., Aiken, A.
2016; 51 (6): 70-84

- **Stratified Synthesis: Automatically Learning the x86-64 Instruction Set** *ACM SIGPLAN NOTICES*
Heule, S., Schkufza, E., Sharma, R., Aiken, A.
2016; 51 (6): 237-250
- **From invariant checking to invariant inference using randomized search** *FORMAL METHODS IN SYSTEM DESIGN*
Sharma, R., Aiken, A.
2016; 48 (3): 235-256
- **Stochastic Program Optimization** *COMMUNICATIONS OF THE ACM*
Schkufza, E., Sharma, R., Aiken, A.
2016; 59 (2): 114-122
- **Interactively Verifying Absence of Explicit Information Flows in Android Apps** *ACM SIGPLAN NOTICES*
Bastani, O., Anand, S., Aiken, A.
2015; 50 (10): 299-315
- **Conditionally Correct Superoptimization** *ACM SIGPLAN NOTICES*
Sharma, R., Schkufza, E., Churchill, B., Aiken, A.
2015; 50 (10): 147-162
- **Verification of Producer-Consumer Synchronization in GPU Programs** *ACM SIGPLAN NOTICES*
Sharma, R., Bauer, M., Aiken, A.
2015; 50 (6): 88-98
- **Composing Concurrency Control** *ACM SIGPLAN NOTICES*
Ziv, O., Aiken, A., Golan-Gueta, G., Ramalingam, G., Sagiv, M.
2015; 50 (6): 240-249
- **Specification Inference Using Context-Free Language Reachability** *ACM SIGPLAN NOTICES*
Bastani, O., Anand, S., Aiken, A.
2015; 50 (1): 553-566
- **M-3: High-Performance Memory Management from Off-the-Shelf Components** *ACM SIGPLAN NOTICES*
Terei, D., Aiken, A., Vitek, J.
2014; 49 (11): 3-13
- **Single: Leveraging Warp Specialization for High Performance on GPUs** *ACM SIGPLAN NOTICES*
Bauer, M., Treichler, S., Aiken, A.
2014; 49 (8): 119-130
- **First-class Runtime Generation of High-performance Types using Exotypes** *35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*
DeVito, Z., Ritchie, D., Fisher, M., Aiken, A., Hanrahan, P.
ASSOC COMPUTING MACHINERY.2014: 77-88
- **Stochastic Optimization of Floating-Point Programs with Tunable Precision** *35th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*
Schkufza, E., Sharma, R., Aiken, A.
ASSOC COMPUTING MACHINERY.2014: 53-64
- **Bias-Variance Tradeoffs in Program Analysis** *41st Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL)*
Sharma, R., Nori, A. V., Aiken, A.
ASSOC COMPUTING MACHINERY.2014: 127-37
- **Data-Driven Equivalence Checking** *ACM SIGPLAN NOTICES*
Sharma, R., Schkufza, E., Churchill, B., Aiken, A.
2013; 48 (10): 391-406
- **Language Support for Dynamic, Hierarchical Data Partitioning** *ACM SIGPLAN NOTICES*
Treichler, S., Bauer, M., Aiken, A.

2013; 48 (10): 495-514

- **Terra: A Multi-Stage Language for High-Performance Computing** *34th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*
DeVito, Z., Hegarty, J., Aiken, A., Hanrahan, P., Vitek, J.
ASSOC COMPUTING MACHINERY.2013: 105–15
- **Stochastic Superoptimization** *ACM SIGPLAN NOTICES*
Schkufza, E., Sharma, R., Aiken, A.
2013; 48 (4): 305-315
- **Data-Driven Equivalence Checking.**
Sharma, R., Schkufza, E., Churchill, B., Aiken, A.
2013
- **Verification as Learning Geometric Concepts** *20th International Static Analysis Symposium (SAS)*
Sharma, R., Gupta, S., Hariharan, B., Aiken, A., Nori, A. V.
SPRINGER-VERLAG BERLIN.2013: 388–411
- **A Data Driven Approach for Algebraic Loop Invariants** *22nd European Symposium on Programming (ESOP)*
Sharma, R., Gupta, S., Hariharan, B., Aiken, A., Liang, P., Nori, A. V.
SPRINGER-VERLAG BERLIN.2013: 574–592
- **Crowd-scale Interactive Formal Reasoning and Analytics.**
Fast, E., Lee, C., Aiken, A., Bernstein, M., Koller, D., Smith, E.
2013
- **A Data Driven Approach for Algebraic Loop Invariants**
Sharma, R., Gupta, S., Hariharan, B., Aiken, A., Liang, P., Nori, A., V.
2013
- **Verification as Learning Geometric Concepts.**
Sharma, R., Gupta, S., Hariharan, B., Aiken, A., Nori, A.
2013
- **Language Support for Dynamic, Hierarchical Data Partitioning.**
Treichler, S., Bauer, M., Aiken, A.
2013
- **An Introduction to Data Representation Synthesis** *COMMUNICATIONS OF THE ACM*
Hawkins, P., Rinard, M., Aiken, A., Sagiv, M., Fisher, K.
2012; 55 (12): 91-99
- **Understanding the Behavior of Database Operations under Program Control** *ACM SIGPLAN NOTICES*
Tamayo, J. M., Aiken, A., Bronson, N., Sagiv, M.
2012; 47 (10): 983-995
- **Automated Error Diagnosis Using Abductive Inference** *ACM SIGPLAN NOTICES*
Dillig, I., Dillig, T., Aiken, A.
2012; 47 (6): 181-191
- **Concurrent Data Representation Synthesis** *ACM SIGPLAN NOTICES*
Hawkins, P., Aiken, A., Fisher, K., Rinard, M., Sagiv, M.
2012; 47 (6): 417-427
- **Legion: Expressing Locality and Independence with Logical Regions** *International Conference for High Performance Computing, Networking, Storage and Analysis (SC)*
Bauer, M., Treichler, S., Slaughter, E., Aiken, A.
IEEE.2012
- **Minimum Satisfying Assignments for SMT.**

- Dillig, I., Dillig, T., McMillan, K., Aiken, A.
2012
- **Interpolants as Classifiers.**
Sharma, R., Nori, A., Aiken, A.
2012
 - **An Introduction to Data Representation Synthesis.** *Communications of the ACM*
Hawkins, P., Aiken, A., Fisher, K., Rinard, M., Sagiv, M.
2012; 12 (55): 91-99
 - **Automated Error Diagnosis Using Abductive Inference**
Dillig, I., Dillig, T.
2012
 - **Reasoning about Lock Placements** *21st European Symposium on Programming (ESOP) held as Part of the 15th European Joint Conferences on Theory and Practice of Software (ETAPS)*
Hawkins, P., Aiken, A., Fisher, K., Rinard, M., Sagiv, M.
SPRINGER-VERLAG BERLIN.2012: 336-356
 - **Cuts from proofs: a complete and practical technique for solving linear inequalities over integers** *FORMAL METHODS IN SYSTEM DESIGN*
Dillig, I., Dillig, T., Aiken, A.
2011; 39 (3): 246-260
 - **Automatic Fine-Grain Locking using Shape Properties** *ACM SIGPLAN NOTICES*
Golan-Gueta, G., Bronson, N., Aiken, A., Ramalingam, G., Sagiv, M., Yahav, E.
2011; 46 (10): 225-241
 - **Testing Atomicity of Composed Concurrent Operations** *ACM SIGPLAN NOTICES*
Shacham, O., Bronson, N., Aiken, A., Sagiv, M., Vechev, M., Yahav, E.
2011; 46 (10): 51-64
 - **Programming the Memory Hierarchy Revisited: Supporting Irregular Parallelism in Sequoia** *ACM SIGPLAN NOTICES*
Bauer, M., Clark, J., Schkufza, E., Aiken, A.
2011; 46 (8): 13-23
 - **Data Representation Synthesis** *ACM SIGPLAN NOTICES*
Hawkins, P., Aiken, A., Fisher, K., Rinard, M., Sagiv, M.
2011; 46 (6): 38-49
 - **Precise and Compact Modular Procedure Summaries for Heap Manipulating Programs** *ACM SIGPLAN NOTICES*
Dillig, I., Dillig, T., Aiken, A., Sagiv, M.
2011; 46 (6): 567-577
 - **Precise Reasoning for Programs Using Containers** *ACM SIGPLAN NOTICES*
Dillig, I., Dillig, T., Aiken, A.
2011; 46 (1): 187-200
 - **Simplifying Loop Invariant Generation Using Splitter Predicates.**
Sharma, R., Dillig, I., Dillig, T.
2011
 - **Liszt: A Domain Specific Language for Building Portable Mesh-based PDE Solvers.**
DeVito, Z., Joubert, N., Palacios, F., Oakley, S., Medina, M., Barrientos, M., Aiken, A.
2011
 - **Inferring Data Polymorphism in Systems Code.**
Hackett, B., Aiken, A.
2011

- **Advice for Program Chairs.** *ACM Sigplan Notices*
Aiken, A.
2011; 4 (46): 19-25
- **Online Detection of Multi-Component Interactions in Production Systems** *IEEE/IFIP 41st International Conference on Dependable Systems and Networks (DSN)*
Oliner, A. J., Aiken, A.
IEEE.2011: 49-60
- **Symbolic Heap Abstraction with Demand-Driven Axiomatization of Memory Invariants** *Conference on Object Oriented Programming Systems, Languages and Applications/SPLASH 2010*
Dillig, I., Dillig, T., Aiken, A.
ASSOC COMPUTING MACHINERY.2010: 397-410
- **Reasoning About the Unknown in Static Analysis** *COMMUNICATIONS OF THE ACM*
Dillig, I., Dillig, T., Aiken, A.
2010; 53 (8): 115-123
- **Expanding the Frontiers of Computer Science: Designing a Curriculum to Reflect a Diverse Field** *41st ACM Technical Symposium on Computer Science Education*
Sahami, M., Aiken, A., Zelenski, J.
ASSOC COMPUTING MACHINERY.2010: 47-51
- **A Query Language for Understanding Component Interactions in Production Systems.**
Oliner, A., Aiken, A.
2010
- **Data Structure Fusion** *8th Asian Symposium on Programming Languages and Systems*
Hawkins, P., Aiken, A., Fisher, K., Rinard, M., Sagiv, M.
SPRINGER-VERLAG BERLIN.2010: 204-221
- **Fluid Updates: Beyond Strong vs. Weak Updates** *19th European Symposium on Programming (ESOP 2010) held at the ETAPES 2010*
Dillig, I., Dillig, T., Aiken, A.
SPRINGER-VERLAG BERLIN.2010: 246-266
- **Small Formulas for Large Programs: On-Line Constraint Simplification in Scalable Static Analysis** *17th International Static Analysis Symposium*
Dillig, I., Dillig, T., Aiken, A.
SPRINGER.2010: 236-252
- **Community Epidemic Detection Using Time-Correlated Anomalies** *13th International Symposium on Recent Advances in Intrusion Detection Systems*
Oliner, A. J., Kulkarni, A. V., Aiken, A.
SPRINGER-VERLAG BERLIN.2010: 360-381
- **Using Correlated Surprise to Infer Shared Influence** *IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*
Oliner, A. J., Kulkarni, A. V., Aiken, A.
IEEE.2010: 191-200
- **Cuts from Proofs: A Complete and Practical Technique for Solving Linear Inequalities over Integers** *21st International Conference on Computer Aided Verification*
Dillig, I., Dillig, T., Aiken, A.
SPRINGER-VERLAG BERLIN.2009: 233-247
- **A capability calculus for concurrency and determinism** *ACM TRANSACTIONS ON PROGRAMMING LANGUAGES AND SYSTEMS*
Terauchi, T., Aiken, A.
2008; 30 (5)
- **Sound, complete and scalable path-sensitive analysis** *ACM SIGPLAN NOTICES*
Dillig, I., Dillig, T., Aiken, A.
2008; 43 (6): 270-280

- **Witnessing side effects** *ACM TRANSACTIONS ON PROGRAMMING LANGUAGES AND SYSTEMS*
Terauchi, T., Aiken, A.
2008; 30 (3)
- **Sound, Complete and Scalable Path-Sensitive Analysis** *ACM SIGPLAN Conference on Programming Language Design and Implementation*
Dillig, I., Dillig, T., Aiken, A.
ASSOC COMPUTING MACHINERY.2008: 270–280
- **Binary Translation Using Peephole Superoptimizers.**
Bansal, S., Aiken, A.
2008
- **A Capability Calculus for Concurrency and Determinism (extended version).** *Transactions on Programming Languages and Systems*
Terauchi, T., Aiken, A.
2008; 5 (30): 1-30
- **Alert Detection in System Logs** *8th IEEE International Conference on Data Mining*
Oliner, A. J., Aiken, A., Stearley, J.
IEEE COMPUTER SOC.2008: 959–964
- **A Tuning Framework for Software-Managed Memory Hierarchies** *17th International Conference on Parallel Architectures and Compilation Techniques*
Ren, M., Park, J. Y., Houston, M., Aiken, A., Daily, W. J.
ASSOC COMPUTING MACHINERY.2008: 280–291
- **Verifying the safety of user pointer dereferences** *IEEE Symposium on Security and Privacy*
Bugrara, S., Aiken, A.
IEEE COMPUTER SOC.2008: 325–338
- **A Portable Runtime Interface For Multi-Level Memory Hierarchies** *ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP 08)*
Houston, M., Park, J., Ren, M., Knight, T., Fatahalian, K., Aiken, A., Dally, W. J., Hanrahan, P.
ASSOC COMPUTING MACHINERY.2008: 143–152
- **Static error detection using semantic inconsistency inference** *Conference on Programming Language Design and Implementation*
Dillig, I., Dillig, T., Aiken, A.
ASSOC COMPUTING MACHINERY.2007: 435–45
- **Regularly annotated set constraints** *Conference on Programming Language Design and Implementation*
Kodumal, J., Aiken, A.
ASSOC COMPUTING MACHINERY.2007: 331–41
- **Conditional Must Not Aliasing for Static Race Detection** *34th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*
Naik, M., Aiken, A.
ASSOC COMPUTING MACHINERY.2007: 327–338
- **Conditional must not aliasing for static race detection** *34th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*
Naik, M., Aiken, A.
ASSOC COMPUTING MACHINERY.2007: 327–38
- **Static Error Detection using Semantic Inconsistency Inference** *Conference on Programming Language Design and Implementation*
Dillig, I., Dillig, T., Aiken, A.
ASSOC COMPUTING MACHINERY.2007: 435–445
- **Measuring Empirical Computational Complexity.**
Goldsmith, S., Aiken, A., Wilkerson, D.
2007
- **Compilation for Explicitly Managed Memory Hierarchies.**
Knight, T., Park, J., Ren, M., Houston, M., Erez, M., Fatahalian, K., Aiken, A.
2007

- **Saturn: A Scalable Framework for Error Detection using Boolean Satisfiability.** *Transactions on Programming Languages and Systems*
Xie, Y., Aiken, A.
2007; 3 (29): 1-16
- **Compilation for Explicitly Managed Memory Hierarchies** *ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*
Knight, T. J., Park, J. Y., Ren, M., Houston, M., Erez, M., Fatahalian, K., Aiken, A., Dally, W. J., Hanrahan, P.
ASSOC COMPUTING MACHINERY.2007: 226–236
- **An Overview of the Saturn Project** *7th ACM SIGPLAN-SIGSOFT Workshop on Program Analysis for Software Tools and Engineering (PASTE 2007)*
Aiken, A., Bugrara, S., Dillig, I., Dillig, T., Hackett, B., Hawkins, P.
ASSOC COMPUTING MACHINERY.2007: 43–48
- **SATURN: A scalable framework for error detection using Boolean satisfiability** *5th Joint Meeting of the European Software Engineering Conference/ACM SIGSOFT Symposium on Software Engineering*
Xie, Y., Aiken, A.
ASSOC COMPUTING MACHINERY.2007
- **Regularly Annotated Set Constraints** *Conference on Programming Language Design and Implementation*
Kodumal, J., Aiken, A.
ASSOC COMPUTING MACHINERY.2007: 331–341
- **Automatic generation of peephole superoptimizers** *ACM SIGPLAN NOTICES*
Bansal, S., Aiken, A.
2006; 41 (11): 394-403
- **Flow-insensitive type qualifiers** *ACM TRANSACTIONS ON PROGRAMMING LANGUAGES AND SYSTEMS*
Foster, J. S., Johnson, R., Kodumal, J., Aiken, A.
2006; 28 (6): 1035-1087
- **Effective static race detection for Java** *ACM SIGPLAN NOTICES*
Naik, M., Aiken, A., Whaley, J.
2006; 41 (6): 308-319
- **A capability calculus for concurrency and determinism** *17th International Conference on Concurrency Theory*
Terauchi, T., Aiken, A.
SPRINGER-VERLAG BERLIN.2006: 218–232
- **On typability for rank-2 intersection types with polymorphic recursion** *21ST ANNUAL IEEE SYMPOSIUM ON LOGIC IN COMPUTER SCIENCE, PROCEEDINGS*
Terauchi, T., Aiken, A.
2006: 111-?
- **Static Detection of Security Vulnerabilities in Scripting Languages.**
Xie, Y., Aiken, A.
2006
- **Sequoia: Programming the Memory Hierarchy.**
Fatahalian, K., Knight, T., Houston, M., Erez, M., Horn, D., Leem, L., Aiken, A.
2006
- **Statistical Debugging: Simultaneous Identification of Multiple Bugs**
Zheng, A., Jordan, M., Liblit, B., Naik, M., Aiken, A.
2006
- **On Typability for Rank-2 Intersection Types with Polymorphic Recursion.**
Terauchi, T., Aiken, A.
2006
- **How is Aliasing Used in Systems Software?**
Hackett, B., Aiken, A.

2006

- **Scalable program analysis using Boolean satisfiability** *4th ACM/IEEE International Conference on Formal Methods and Models for Co-Design*
Aiken, A.
IEEE.2006: 89–89
- **Static detection of security vulnerabilities in scripting languages** *15th USENIX Security Symposium*
Xie, Y., Aiken, A.
USENIX ASSOC.2006: 179–192
- **Relational queries over program traces** *20th Conference on Object-Oriented Programming, Systems, Languages and Applications*
Goldsmith, S., O'Callahan, R., Aiken, A.
ASSOC COMPUTING MACHINERY.2005: 385–402
- **Witnessing side-effects** *10th ACM SIGPLAN International Conference on Functional Programming (ICFP)*
Terauchi, T., Aiken, A.
ASSOC COMPUTING MACHINERY.2005: 105–15
- **Scalable statistical bug isolation** *Conference on Programming Language Design and Implementation*
Liblit, B., Naik, M., Zheng, A. X., Aiken, A., Jordon, M. I.
ASSOC COMPUTING MACHINERY.2005: 15–26
- **Scalable error detection using boolean satisfiability** *32nd ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*
Xie, Y. C., Aiken, A.
ASSOC COMPUTING MACHINERY.2005: 351–63
- **Context- and Path-Sensitive Memory Leak Detection.**
Xie, Y., Aiken, A.
2005
- **Soundness and its Role in Bug Detection Systems (position paper).**
Xie, Y., Naik, M., Hackett, B., Aiken, A.
2005
- **Banshee: A scalable constraint-based analysis toolkit** *12th International Static Analysis Symposium (SAS 2005)*
Kodumal, J., Aiken, A.
SPRINGER-VERLAG BERLIN.2005: 218–234
- **Secure information flow as a safety problem** *12th International Static Analysis Symposium (SAS 2005)*
Terauchi, T., Aiken, A.
SPRINGER-VERLAG BERLIN.2005: 352–367
- **Saturn: A SAT-based tool for bug detection** *17th International Conference on Computer Aided Verification*
Xie, Y. C., Aiken, A.
SPRINGER-VERLAG BERLIN.2005: 139–143
- **The set constraint/CFL reachability connection in practice** *Conference on Programming Language Design and Implementation*
Kodumal, J., Aiken, A.
ASSOC COMPUTING MACHINERY.2004: 207–18
- **Public Deployment of Cooperative Bug Isolation.**
Liblit, B., Naik, M., Zheng, A., Aiken, A., Jordan, M., I.
2004
- **Statistical Debugging of Sampled Programs.**
Zheng, A., Jordan, M., I., Liblit, B., Aiken, A.
2004
- **Type Systems for Distributed Data Sharing.**
Liblit, B., Aiken, A., Yelick, K.

2003

- **Bug Isolation via Remote Program Sampling.**
Liblit, B., Aiken, A., Zheng, A., Jordan, M., I.
2003
- **Sampling User Executions for Bug Isolation.**
Liblit, B., Aiken, A., Zheng, A., Jordan, M., I.
2003
- **Checking and Inferring Local Non-Aliasing**
Aiken, A., Foster, J., Kodumal, J., Terauchi, T.
2003
- **Winnowing: Local Algorithms for Document Fingerprinting.**
Schleimer, S., Wilkerson, D., Aiken, A.
2003
- **Flow-Sensitive Type Qualifiers.**
Foster, J., Terauchi, T., Aiken, A.
2002
- **First-Order Theory of Subtyping Constraints**
Su, Z., Aiken, A., Niehren, J., Priesnitz, T., Trienen, R.
2002
- **Entailment with Conditional Equality Constraints,**
Su, Z., Aiken, A.
2001
- **Language Support for Regions.**
Gay, D., Aiken, A.
2001
- **A First Step Towards Automated Detection of Buffer Overrun Vulnerabilities.**
Wagner, D., Foster, J., Brewer, E., Aiken, A.
2000
- **Polymorphic versus Monomorphic Flow-Insensitive Points-to Analysis for C.**
Foster, J., Fähndrich, M., Aiken, A.
2000
- **Projection Merging: Reducing Redundancies in Inclusion Constraint Graphs.**
Fähndrich, M., Su, Z., Aiken, A.
2000
- **Type Systems for Distributed Data Structures.**
Liblit, B., Aiken, A.
2000
- **Optimal Representations of Polymorphic Types with Subtyping.** *Higher-Order and Symbolic Computation*
Aiken, A., Wimmers, E., Palsberg, J.
1999; 3 (12)
- **Introduction to Set Constraint-Based Program Analysis.** *Science of Computer Programming*
Aiken, A.
1999; 1999 (35): 79-111
- **A Theory of Type Qualifiers.**
Foster, J., Fähndrich, M., Aiken, A.

1999

- **A Toolkit for Constructing Type- and Constraint-Based Program Analyses (invited paper).**

Aiken, A., Fähndrich, M., Foster, J., Su, Z.

1998

- **Barrier Inference.**

Gay, D., Aiken, A.

1998

- **Partial Online Cycle Elimination in Inclusion Constraint Graphs.**

Fähndrich, M., Foster, J., Su, Z., Aiken, A.

1998

- **Detecting Races in Relay Ladder Logic Programs.**

Aiken, A., Fähndrich, M., Su, Z.

1998

- **Titanium: A High-Performance Java Dialect.**

Yelick, K., Semenzato, L., Pike, G., Miyamoto, C., Liblit, B., Krishnamurthy, A., Aiken, A.

1998

- **Memory Management with Explicit Regions.**

Gay, D., Aiken, A.

1998

- **Attack Resistant Trust Metrics for Public Key Certification.**

Levien, R., Aiken, A.

1998

- **Program Analysis Using Mixed Term and Set Constraints.**

Fähndrich, M., Aiken, A.

1997

- **Optimal Representations of Polymorphic Types with Subtyping (Extended Abstract).**

Aiken, A., Wimmers, E., Palsberg, J.

1997

- **Refined Type Inference for ML.**

Fähndrich, M., Aiken, A.

1997

- **Making Set-Constraint Program Analyses Scale.**

Fähndrich, M., Aiken, A.

1996

- **Cool: A Portable Project for Teaching Compiler Construction. *CM Sigplan Notices***

Aiken, A.

1996; 7 (31): 19-26

- **Tioga-2: A Direct Manipulation Database Visualization Environment.**

Aiken, A., Chen, J., Stonebraker, M., Woodruff, A.

1996

- **STATIC ANALYSIS TECHNIQUES FOR PREDICTING THE BEHAVIOR OF ACTIVE DATABASE RULES *ACM TRANSACTIONS ON DATABASE SYSTEMS***

Aiken, A., Hellerstein, J. M., Widom, J.

1995; 20 (1): 3-41

- **Decidability of Systems of Set Constraints with Negative Constraints. *Information and Computation***

Aiken, A., Kozen, D., Wimmers, E.

1995; 1 (122): 30-44

- **Navigation and Coordination Primitives for Multidimensional Browsers.**
Woodruff, A., Su, A., Stonebraker, M., Paxson, C., Chen, J., Aiken, A.
edited by Woodruff, A., Su, A., Stonebraker, M.
1995
- **Dynamic Typing vs. Subtype Inference.**
Aiken, A., Fähndrich, M.
1995
- **Resource-Constrained Software Pipelining, *IEEE Transactions on Distributed and Parallel Systems***
Aiken, A., Nicolau, A., Novack, S.
1995; 12 (6): 1248-1270
- **The Tioga-2 Database Visualization Environment.**
Aiken, A., Chen, J., Lin, M., Spalding, M., Stonebraker, M., Woodruff, A.
1995
- **Better Static Memory Management: Improvements to Region-Based Analysis of Higher-Order Languages.**
Aiken, A., Fähndrich, M., Levien, R.
1995
- **Safe-A Semantic Technique for Transforming Programs in the Presence of Errors. *ACM Transactions on Programming Languages and Systems***
Aiken, A., Williams, J., Wimmers, E.
1995; 1 (17): 63-84
- **Soft Typing with Conditional Types.**
Aiken, A., Wimmers, E., Lakshman, T., K.
1994
- **Zooming and Tunneling in Tioga: Supporting Navigation in Multidimensional Space.**
Woodruff, A., Wisnovsky, P., Taylor, C., Stonebraker, M., Paxson, C., Chen, J., Aiken, A.
1994
- **Using the Run-Time Sizes of Data Structures to Guide Parallel Thread Creation.**
Huelsbergen, L., Larus, J., Aiken, A.
1994
- **Set Constraints: Results, Applications, and Future Directions.**
Aiken, A.
1994
- **Directional Type Checking of Logic Programs.**
Aiken, A., Lakshman, T., K.
1994
- **Type Inclusion Constraints and Type Inference.**
Aiken, A., Wimmers, E.
1993
- **The Complexity of Set Constraints.**
Aiken, A., Kozen, D., Vardi, M., Wimmers, E.
1993
- **Solving Systems of Set Constraints.**
Aiken, A., Wimmers, E.
1992
- **Behavior of Database Production Rules: Termination, Confluence, and Observable Determinism.**
Aiken, A., Widom, J., Hellerstein, J., M.

1992

- **IMPLEMENTING REGULAR TREE EXPRESSIONS** *LECTURE NOTES IN COMPUTER SCIENCE*
Aiken, A., Murphy, B. R.
1991; 523: 427-447
- **A Realistic Resource-Constrained Software Pipelining Algorithm** *Advances in Languages and Compilers for Parallel Processing*
Aiken, A., Nicolau, A.
edited by Aiken, A., Nicolau, A., Gelernter et al., D.
MIT Press, Cambridge, Massachusetts. 1991: 274–290
- **Static Type Inference in a Dynamically Typed Language.**
Aiken, A., Murphy, B.
1991
- **A Theory of Compaction-Based Parallelization.** *Theoretical Computer Science*
Aiken, A.
1990; 2 (73): 121-154
- **Fine-Grain Parallelization and the Wavefront Method** *Languages and Compilers for Parallel Computing*
Aiken, A., Nicolau, A.
edited by Aiken, A., Nicolau, A., Gelernter et al., D.
MIT Press, Cambridge, Massachusetts. 1990: 1–16
- **Program Transformation in the Presence of Errors.**
Aiken, A., Williams, J., Wimmers, E.
1990
- **Fine-Grain Compilation for Pipelined Machines** *Journal of Supercomputing*
Nicolau, A., Pingali, K., Aiken, A.
1988; 3 (2): 279-295
- **Optimal Loop Parallelization.**
Aiken, A., Nicolau, A.
1988
- **A Development Environment for Horizontal Microcode (revised).** *IEEE Transactions on Software Engineering*
Aiken, A., Nicolau, A.
1988; 5 (14): 584-594
- **Perfect Pipelining: A New Loop Parallelization Technique.**
Aiken, A., Nicolau, A.
1988
- **A Development Environment for Horizontal Microcode.**
Aiken, A., Nicolau, A.
1986
- **A Direct Manipulation Environment for Programming Semantic Zoom Visualizations of Tabular Data.** *Journal of Visual Languages and Computing*
Woodruff, A., Olston, C., Aiken, A., Chu, M., Ercegovic, V., Lin, M.
; 5 (12): 551-571
- **Detecting Races in Relay Ladder Logic Programs.** *Software Tools for Technology Transfer*
Su, Z., Aiken, A., Fähndrich, M.
; 2000 (3): 93-105