

# MARK W. BAILEY

Department of Computer Science  
Hamilton College  
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## CURRICULUM VITÆ

### EDUCATION

*Doctor of Philosophy*, Computer Science, University of Virginia, Charlottesville, May 2000.

*Master of Computer Science*, University of Virginia, Charlottesville, August 1990.

*Bachelor of Science*, Computer Science, University of Massachusetts, Amherst, May 1988.

### ACADEMIC POSITIONS

*The Robert and Pamela (Craig) Delaney Professor in Computer Science* (July 2022–present). Hamilton College, Clinton, NY.

*Professor of Computer Science* (July 2012–June 2022). Hamilton College, Clinton, NY.

*Associate Professor of Computer Science* (July 2005–June 2012). Hamilton College, Clinton, NY.

*Visiting Professor* (July 2007–June 2008). Department of Computer Science, University of Virginia, Charlottesville, VA.

*Assistant Professor of Computer Science* (April 2000–June 2005). Hamilton College, Clinton, NY.

*Visiting Assistant Professor* (June 2001–July 2002). Department of Computer Science, Florida State University, Tallahassee, FL.

*Instructor of Computer Science* (July 1997–April 2000). Hamilton College, Clinton, NY.

*Instructor* (Spring 1995). Department of Computer Science, University of Virginia, Charlottesville, VA.

### PROFESSIONAL EXPERIENCE

*Technical Consultant* (August 2021–September 2021). Willkie Farr & Gallagher LLP, New York, NY.

*Consultant* (December 2004–July 2007). Assured Information Security. Rome, NY.

*Outside Consultant* (March 2001–September 2004). Information Directorate, Air Force Research Lab, Rome, NY.

### AWARDS AND HONORS

Class of 1963 Faculty Fellowship. Hamilton College. Summer 2015.

Richardson Award for Faculty Innovation. Hamilton College. Summer 2006.

Faculty Research Fellowship. National Research Council/United States Air Force Office of Scientific Research, Summer 2003.

Sigma Xi Scientific Research Society.

Tau Beta Pi Engineering Honor Society.

### GRANT AND GIFT AWARDS

*Stimulating Wide Interest in Computer Science using Computer Security*. With University of Virginia. National Science Foundation (DUE). \$149,976. August 2009–July 2011.

*Using Phoenix in Computer Security Curricula: Phase II*. Microsoft Research, External Research & Programs. \$100,000. Awarded December 2007.

*Travel Grants for Faculty at Minority/Female Institutions to Attend FCRC'07.* National Science Foundation (CISE). \$72,066. September 2006–August 2008.

*Using Phoenix in Computer Security Curricula.* Microsoft Research, External Research & Programs. \$147,490. Awarded September 2006.

*Branch Elimination by Condition Merging.* With Florida State University. National Science Foundation (CISE). \$250,000. September 2002–August 2005.

Travel and support grant for the *NATO Advanced Study Institute on Fundamentals and Standards in Hardware Description Languages*, April 1993.

#### COLLEGE SERVICE

Chair, Department of Computer Science (2011–2014, 2015–2018, 2018–2021, 2022–2025).

Member, Program Committee, Data Science (2022–present).

Digital Gateway Planning Committee (2020–present).

*Parliamentarian* (2008–2011, 2022–2025).

Committee on Evaluating Teaching (2019–2021)

Chair, Science department chairs (2013–2014, 2016–2017).

Sigma Xi, Hamilton College Chapter, Past President (2018–2020), President (2016–2018), Vice President (2014–2016).

Chair, Digital Working Group, Strategic Planning Committee (Summer 2017).

Information Security Board of Review (2012–2018). <https://www.overleaf.com/project/56f18234fc8f758f0eacf1b1>

High Performance Computing Advisory Committee (2008–present).

Committee on Budget and Finance (2015–2017).

Committee on Student Activities (2005–2009).

Committee on Information Technology (2005–2006), *Chair* (2003–2005).

Alumni Council (2002–2005).

Appeals Board (2002–2004), *Chair* (2004–2005).

Sigma Xi Executive Committee, Hamilton College Chapter (2003–2005).

Honor Court (1999–2002).

Summer Research in the Sciences Committee (1997–2004).

Science Facilities Faculty Committee (1998–1999).

#### PROFESSIONAL SERVICE

Northeast Region Representative, Board of Directors for the Consortium of Computer Sciences in Colleges (August 2022–present).

Director, Board of Directors for the Barry Goldwater Educational Support Fund (2020–2023).

Director, Board of Directors for the Consortium of Computing Sciences in Colleges—Northeastern Region (September 2016–present).

Editor-in-Chief, *ACM Inroads*, August 2015–March 2019.

Associate Program Chair, *ACM SIGCSE Technical Symposium on Computer Science Education*, 2019–2023.

Program Chair, *2023 Consortium of Computing Sciences in Colleges—Northeastern Conference*, Ithaca

College, Clinton, NY. April 2023.

Question Leader, College Board Advanced Placement Exam in Computer Science A (2018–2022), Table Leader (2016–2017), Reader (2003, 2009, 2013–2015).

Review Committee for the *Barry Goldwater Scholarship and Excellence in Education Foundation*, 2014–2020.

External reviewer, Computer Science degree program, Department of Information Technologies, County College of Morris, Randolph, NJ. February, 2020.

External Consultant, College Board Advanced Placement Exam in Computer Science A, Educational Testing Service (2020–2021).

Question Reviewer, College Board Advanced Placement Exam in Computer Science A, Educational Testing Service (2020).

Question Developer, College Board Advanced Placement Exam in Computer Science A (2018).

Question Leader, Online Distributed Scoring Pilot, College Board Advanced Placement Exam in Computer Science A (2018).

Papers co-chair, *Consortium of Computing Sciences in Colleges—Northeastern Conference*, 2011–2014.

Invited participant, *Cybersecurity Hard Problems Workshop*. Cyber Research Institute, Rome, NY. March 2014, August 2014, June 2015.

External reviewer, Department of Computer Science, Siena College, Loudonville, NY. April, 2013.

Editor, *ACM SIGPLAN Notices* (a monthly publication of the Association for Computing Machinery's Special Interest Group on Programming Languages) and member of the ACM SIGPLAN Executive Committee (September 2005–April 2011).

External reviewer, Department of Computer Science, State University of New York at Oswego, Oswego, NY. May, 2009.

Organizing Committee (Faculty Support Travel Chair) for the *2007 Federated Computing Research Conference*.

Organizing Committee and Student Poster Session Chair for the *ACM SIGPLAN/SIGBED 2004 Conference on Languages, Compilers, and Tools for Embedded Systems*.

Organizing Committee and Student Research Forum Co-chair for the *2001 ACM SIGPLAN Conference on Programming Language Design and Implementation*.

Review panel for the 2018 CyberCorps: Scholarship for Service program, Division of Undergraduate Education, National Science Foundation. Division of Undergraduate Education, National Science Foundation.

Review panel for the 2016 Secure and Trustworthy CyberSpace program, Division of Computer & Information Science & Engineering, National Science Foundation.

Review panel for the 2014 STEM-C Partnerships: Computing Education for the 21st Century program, Division of Computer & Information Science & Engineering, National Science Foundation.

Review panel for the 2014 Improving Undergraduate STEM Education program, Division of Undergraduate Education, National Science Foundation.

Review panel for the 2013 Storage Systems, Computer Systems Research program, Division of Computer & Information Science & Engineering, National Science Foundation.

Review panel for the 2012 Federal Cyber Service: Scholarship for Service program, Division of Un-

dergraduate Education, National Science Foundation.

Review panel for the 2012 Transforming Undergraduate Education in Science, Technology, Engineering, and Mathematics, Division of Undergraduate Education, National Science Foundation.

Review panel for the 2012 Federal Cyber Service: Scholarship for Service program, Division of Undergraduate Education, National Science Foundation.

Review panel for the 2009 Computer Network Systems, Computer Systems Research program, Division of Computer & Information Science & Engineering, National Science Foundation.

Review panel for the 2009 Course, Curriculum, and Laboratory Improvement program, Phase I, Division of Undergraduate Education, National Science Foundation.

Review panel for the 2008 Cyber Trust Exploratory Research program, Division of Computer & Information Science & Engineering, National Science Foundation.

Review panel for the 2008 Federal Cyber Service: Scholarship for Service program, Division of Undergraduate Education, National Science Foundation.

Chair, review panel for the 2003 Course, Curriculum, and Laboratory Improvement program, EMD/ND track, Division of Undergraduate Education, National Science Foundation.

Review panel for the 2002 Course, Curriculum, and Laboratory Improvement program, A&I track, Division of Undergraduate Education, National Science Foundation.

Review panel for the 2001 Compilers and Operating Systems program, Division of Computer & Information Science & Engineering, National Science Foundation.

Reviewer, Consortium of Computing Sciences in Colleges Northeastern Conference, 2005, 2010, 2013.

Reviewer, *ACM SIGCSE Technical Symposium on Computer Science Education*, 2003, 2006–2014.

Reviewer, GEAR: Research Experiences program, South Carolina Experimental Program to Stimulate Competitive Research and Institutional Development Awards, 2013.

Reviewer, *ACM SIGPLAN Conference on Programming Language Design and Implementation*, 1997, 2001, 2005.

Reviewer, *2005 ACM SIGPLAN Conference on Principles of Programming Languages*.

Reviewer, *ACM SIGPLAN Joint Conference on Languages, Compilers and Tools for Embedded Systems / Software and Compilers for Embedded Systems*, 2002.

Reviewer, *IEEE Transactions on Systems, Man, and Cybernetics special issue in Secure Knowledge Management*.

Reviewer, *ACM Inroads*.

Reviewer, *IEEE Computer*.

Reviewer, *IEEE Transactions on Software Engineering*.

Reviewer, *ACM Transactions on Programming Languages and Systems*.

Reviewer for Academic Press, Jones and Bartlett.

#### COMMUNITY SERVICE

Board of Directors for the Clinton Early Learning Center (President 2006, Vice President 2005–2006, Treasurer 2005–2006, Secretary 2004–2005).

#### PROFESSIONAL AFFILIATIONS

Association for Computing Machinery.

## ACM Special Interest Group on Computer Science Education.

## RECENT COURSES TAUGHT

| Academic Year | Fall Semester   | Spring Semester   |
|---------------|---|---|
| 2022–2023     | CS 240: <i>Computer Organization</i> (24)               | CS 240: <i>Computer Organization</i> (24)               |
|               | CS 102: <i>Design Principles Laboratory</i> (20)        | CS 320: <i>Computer Architecture</i> (24)               |
|               | CS 102: <i>Design Principles Laboratory</i> (20)        |   |
| 2021–2022     | CS 205: <i>Technologies Seminar</i> (5 <sup>†</sup> )   |   |
| 2020–2021     | CS 101: <i>Computer Science for All</i> (51)            | CS 101: <i>Computer Science for All Laboratory</i> (20) |
|               | CS 101: <i>Computer Science for All Laboratory</i> (15) | CS 101: <i>Computer Science for All Laboratory</i> (20) |
|               | CS 101: <i>Computer Science for All Laboratory</i> (15) | CS 101: <i>Computer Science for All Laboratory</i> (20) |
|               |   | CS 240: <i>Computer Organization</i> (15)               |
|               |   | CS 240: <i>Computer Organization</i> (16)               |
| 2019–20       | CS 112: <i>Problem Solving and Data Structures</i> (12) | CS 240: <i>Computer Organization</i> (16)               |
|               | CS 240: <i>Computer Organization</i> (19), Lab          | CS 320: <i>Computer Architecture</i> (14)               |
| 2018–19       | CS 112: <i>Problem Solving and Data Structures</i> (15) | CS 240: <i>Computer Organization</i> (19), Lab          |
|               | CS 240: <i>Computer Organization</i> (19), Lab          |   |
| 2017–18       | CS 112: <i>Problem Solving and Data Structures</i> (15) | CS 320: <i>Computer Architecture</i> (12)               |
|               | CS 310: <i>Compilers</i> (8)                            |   |
| 2016–17       | CS 110: <i>Introduction to Computer Science</i> (26)    | CS 111: <i>Data Structures</i> (28)                     |
|               | CS 110: <i>Introduction to Computer Science</i> (25)    | CS 220: <i>Principles of Programming Languages</i> (27) |
| 2015–16       | CS 210: <i>Applied Theory</i> (22)                      | CS 110: <i>Introduction to Computer Science</i> (26)    |
|               | CS 240: <i>Computer Organization</i> (26)               | CS 320: <i>Computer Architecture</i> (14)               |
|               | CS 290: <i>Programming Challenges</i> (16)              | CS 320: <i>Computer Architecture</i> (14)               |
| 2013–14       | CS 111: <i>Data Structures</i> (15)                     | CS 111: <i>Data Structures</i> (26)                     |
|               | CS 240: <i>Computer Organization</i> (20)               | CS 290: <i>Programming Challenges</i> (10)              |
|               | CS 290: <i>Programming Challenges</i> (12)              | CS 320: <i>Computer Architecture</i> (12)               |

<sup>†</sup>Number of students enrolled.

## PUBLICATIONS

- [1] Gary R. Skuse, Daniel A. Walzer, Kathryn Tomasek, Douglas Baldwin, and Mark Bailey. Computer science and the liberal arts: Hidden synergies and boundless opportunities. In *New Directions for Computing Education: Embedding Computing Across Disciplines*. Springer, 2017.
- [2] Mark W. Bailey, Laurel A. Emurian, Spencer E. Gulbranson, Mary E. Lerner, and Leah R. Wolf. *Secrets, Lies, and Digital Threats, Course Materials*. Microsoft Academic Alliance, 2012.
- [3] Laurel A. Emurian and Mark Bailey. Time in confidence intervals. In *Proceedings of the Fifteenth Annual Computing Science in College Northeastern Conference*, April 2010.
- [4] Mark W. Bailey, Kim Bruce, Kathleen Fisher, Robert Harper, and Stuart Reges. Report of the 2008 SIGPLAN programming languages curriculum workshop. In *SIGCSE '09: Proceedings of the 40th SIGCSE Technical Symposium on Computer Science Education*, pages 132–133, New York, NY, USA, March 2009. ACM.
- [5] Eric Allen, Mark W. Bailey, Ras Bodik, Kim Bruce, Kathleen Fisher, Stephen Freund, Robert Harper, Chandra Krintz, Shriram Krishnamurthi, Jim Larus, Doug Lea, Gary Leavens, Lori Pollock, Stuart Reges, Martin Rinard, Mark Sheldon, Franklyn Turbak, and Mitchell Wand. 2008 SIGPLAN programming language curriculum workshop: Discussion summaries and recommendations. *SIGPLAN Notices*, 43(11):6–29, November 2008.
- [6] Mark W. Bailey. Injecting programming language concepts throughout the curriculum: An inclusive strategy. In *Workshop Record of the 2008 SIGPLAN Workshop on Undergraduate Programming Language Curricula*, pages 36–38, May 2008.
- [7] Mark W. Bailey, Clark L. Coleman, and Jack W. Davidson. Defense against the dark arts. In *SIGCSE '08: Proceedings of the 39th SIGCSE Technical Symposium on Computer Science Education*, pages 315–319, New York, NY, USA, March 2008. ACM.
- [8] Prasad Kulkarni, Wankang Zhao, Stephen Hines, David Whalley, Xin Yuan, Robert van Engelen, Kyle Gallivan, Jason Hiser, Jack Davidson, Baosheng Cai, Mark Bailey, Hwashin Moon, Kyunghwan Cho, and Yunheung Paek. VISTA: VPO interactive system for tuning applications. *ACM Transactions on Embedded Computing Systems*, 5(4):819–863, November 2006.
- [9] Michael Gruen and Mark Bailey. A secure low-power approach for providing mobile encryption. In *Proceedings of the Eleventh Annual Computing Science in College Northeastern Conference*, pages 288–289, April 2006.
- [10] Erik Goulding, Michael Gruen, Aram Kudurshian, and Mark Bailey. Bluetooth automatic data acquisition and synchronization software. In *Proceedings of the Eleventh Annual Computing Sciences in Colleges Northeastern Conference*, pages 289–290, April 2006.
- [11] Erik Goulding and Mark Bailey. Processor cycle usage profiling on the SPARC. In *Proceedings of the Tenth Annual Computing Sciences in Colleges Northeastern Conference*, pages 150–151, April 2005.
- [12] Mark W. Bailey. IRONCODE: Think-twice, code-once programming. In *SIGCSE '05: Proceedings of the 36th SIGCSE Technical Symposium on Computer Science Education*, pages 181–185, New York, NY, USA, February 2005. ACM.

- [13] William C. Krehling, David Whalley, Mark W. Bailey, Xin Yuan, Gang-Ryung Uh, and Robert van Engelen. Branch elimination by condition merging. *Software-Practice and Experience*, 35(1):51–74, January 2005.
- [14] Mark W. Bailey and Kevin Kwiat. Securing knowledge queries using code striping. In *Workshop Record of the 2004 Workshop on Secure Knowledge Management*, September 2004.
- [15] Mark W. Bailey and Kevin Kwiat. A task distribution model for protection of servers and tasks in a fault-tolerant distributed system. United States Patent Application (patent pending), September 2004.
- [16] Christopher R. LaRosa and Mark W. Bailey. A docked-aware storage architecture for mobile computing. In *CF '04: Proceedings of the 1st Conference on Computing Frontiers*, pages 255–262, New York, NY, USA, April 2004. ACM.
- [17] Mark W. Bailey. A task distribution method for protection of servers and tasks in a fault-tolerant distributed system. Final report for National Research Council Faculty Research Fellowship, August 2003.
- [18] Mark W. Bailey and Jack W. Davidson. Automatic detection and diagnosis of faults in generated code for procedure calls. *IEEE Transactions on Software Engineering*, 29(11):1031–1042, November 2003.
- [19] William Krehling, David Whalley, Mark Bailey, Xin Yuan, Gang-Ryung Uh, and Robert van Engelen. Branch elimination via multi-variable condition merging. In *Proceedings of the 9th International Conference on Parallel and Distributed Computing*, pages 261–270, August 2003.
- [20] Prasad Kulkarni, Wankang Zhao, Hwashin Moon, Kyunghwan Cho, David Whalley, Jack Davidson, Mark Bailey, Yunheung Paek, and Kyle Gallivan. Finding effective optimization phase sequences. In *LCTES '03: Proceedings of the 2003 ACM SIGPLAN Conference on Language, Compilers, and Tools for Embedded Systems*, pages 12–23, New York, NY, USA, June 2003. ACM.
- [21] Wankang Zhao, Baosheng Cai, David Whalley, Mark W. Bailey, Robert van Engelen, Xin Yuan, Jason D. Hiser, Jack W. Davidson, Kyle Gallivan, and Douglas L. Jones. VISTA: A system for interactive code improvement. In *LCTES/SCOPES '02: Proceedings of the Joint Conference on Languages, Compilers and Tools for Embedded Systems*, pages 155–164, New York, NY, USA, June 2002. ACM.
- [22] Mark W. Bailey and Nathan C. Weston. Performance benefits of tail recursion removal in procedural languages. Technical Report TR-2001-2, Department of Computer Science, Hamilton College, June 2001.
- [23] David Whalley, Mark Bailey, Robert van Engelen, and Xin Yuan. Collaborative research: Branch elimination by condition merging. Grant proposal funded by the National Science Foundation, September 2002.
- [24] Mark W. Bailey and Jack W. Davidson. Target-sensitive construction of diagnostic programs for procedure calling sequence generators. In *PLDI '96: Proceedings of the ACM SIGPLAN 1996 Conference on Programming Language Design and Implementation*, pages 249–257, New York, NY, USA, May 1996. ACM.
- [25] Mark W. Bailey and Jack W. Davidson. Reusable application-dependent machine descriptions. In *Workshop Record of The Inaugural Workshop on Compiler Support for Systems Software*, pages 77–85, February 1996.

- [26] Mark W. Bailey and Jack W. Davidson. A formal model and specification language for procedure calling conventions. In *POPL '95: Proceedings of the 22nd ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, pages 298–310, New York, NY, USA, January 1995. ACM.
- [27] Michael J. Alexander, Mark W. Bailey, Bruce R. Childers, Jack W. Davidson, and Sanjay Jinturkar. Memory bandwidth optimizations for wide-bus machines. In *Proceedings of the Hawaii International Conference on System Sciences*, pages 466–475, January 1993.
- [28] Mark W. Bailey and Janalee O'Bagy. FLECS: A tool for rapid prototyping of mechanisms in success/failure based languages. Technical Report CS-90-35, Department of Computer Science, University of Virginia, Charlottesville, VA, USA, July 1990.