

**Diana M. Franklin**  
*Curriculum Vitae*

**Education**

University of California at Davis, Ph.D. in Computer Science, 2002.  
University of Illinois at Urbana-Champaign, MCS. in Computer Science, 1999.  
University of California at Davis, B.S. in Computer Science, 1997.

**Area of Specialization**

Computer Science Education, Quantum Computer Architecture, and Diversity, Equity, and Inclusion

**Professional Experience**

University of Chicago, Computer Science Department, Research Associate Professor, 2015-present  
University of Chicago, UChicago STEM Education, Director of Computer Science, 2015-present.  
University of Chicago, Computer Science Department, Lecturer, 2015-present  
University of California at Santa Barbara, LSOE, 2007-2016,  
100%, Dept of Computer Science, 0% Gevirtz Graduate School of Education  
Director, Center for Computing Education and Diversity, 2008-present  
California Polytechnic State University, San Luis Obispo, Associate Professor, 2007  
California Polytechnic State University, San Luis Obispo, Assistant Professor, 2002-2007  
Seven Pinnacles, consultant, 2006-2007  
Compaq VSSAD group, Research Intern, Summer 2000  
University of California at Davis, Associate Instructor, ECS 154B: Computer Architecture. Fall quarter, 2000  
Lawrence Livermore National Laboratory, Summer Intern, Summer 1997, 1998

**Professional Organizations**

Association for Computing Machinery  
IEEE Computer Society

**Awards and Honors**

CHI Honourable Mention Award (ranked top 5% of all submissions), 2018  
ICER Best Paper Award: John Henry Award, 2017  
NSF Future Directions in Computer Science Education – Part 2 participant, Spring 2014  
Frontiers on Engineering Education, National Academy of Engineering, participant, Fall 2013  
NCWIT Undergraduate Research Mentoring Award, 2012 (4 chosen nationally)  
Outstanding Faculty Member 2011, 2010 voted by graduating CS major seniors  
NSF CAREER Award - 2007  
Most Inspiring Professor – 2007 voted by all CPE majors  
Nominated for SWE Most Supportive Professor Award, 2004, 2005, 2006  
IEEE Outstanding Computer Engineering Instructor for 2003 school year voted by all CPE majors  
IEEE Outstanding Professor, March 2003 nominated by CPE students

**Prestigious Presentations**

Invited Facilitator, K-6 Computational Thinking, RPP PI Meeting, 2019  
Panelist, CS4IL Summit, Curriculum and Diversity, 2019  
Presenter, PreK-5<sup>th</sup> grade CT Integration, STEM+C PI Summit, 2019  
Keynote panel, RESPECT conference, 2019  
Testified before Congressional Subcommittee about Quantum Computing, 2018. (4 chosen nationally)

**TEACHING**

Courses taught regularly throughout career: Computer Architecture, Introduction to Programming, Data Structures, Computers for Learning (education, game development)

Courses interested in teaching or developing, depending on fit with department:  
Graduate-level course on Computer Science Educational Research – History, Methods, and Open Questions  
Computer Science for Educators  
Designing Computational Learning Experiences

## Graduate Degree Committees

### MS Committees

<u>Student</u>	<u>Year Degree Completed.</u>	<u>Chair/ Member</u>	<u>Optional Info (e.g., Current Employment)</u>
Ayswarya Sundarum (Calpoly)	2008	Member	CISCO
Charlotte Hill	2015	Member	Apple

### PhD Committees

<u>Student</u>	<u>Year Degree Completed / (expected)</u>	<u>Chair/ Member</u>	<u>Optional Info (e.g., Current Employment)</u>
Jean Salac	2022	Chair	
Yongshan Ding	2021	Member	
Adam Holmes	2020	Member	Intel
Ali JavadiAbhari	2017	Member	IBM
Summer Deng	2017	Member	Facebook
Bryce Boe	2014	Chair	AppFolio
Bitu Mazloom	2013	Member	Foothill College
Hebatallah Saadeldeen	2013	Member	Intel
Susmit Biswas	2010	Member	AMD
Darshan Thaker	2008	Member	KLA Tencor

### Postdoctoral students supervised

<u>Year</u>	<u>Name</u>	<u>Current Employment</u>
2019	Janet Liao	Asst. Prof. East Carolina University
2017	David Weintrop	Asst. Prof. University of Maryland-College Park
2015	Hilary Dwyer	Manager, Cytrix

### Staff members supervised

<u>Year</u>	<u>Name</u>	<u>Position</u>
2019	Donna Eatinger	Curriculum Development Specialist
2018-19	Randy Landsberg	Director of Outreach and Education, EPIQC
2017-19	Sue Krause	Curriculum Development Specialist
2017-19	Jennifer Palmer	Curriculum Development Specialist
2017-19	Carla Strickland	Curriculum Development Specialist

## **PART II. PROFESSIONAL ACTIVITIES**

### Grants and Contracts

*Total \$13M, \$3M as PI, \$2.2M in Education and \$800K in Architecture. Active grants in bold*

<u>Years</u>	<u>Source</u>	<u>Title</u>	<u>Amount</u>	<u>Prin. Invest.</u>
<b>2019-2024</b>	<b>DOE</b>	<b>Improving Pedagogy to Accelerate Computational Thinking (IMPACT)</b>	<b>\$4M</b>	<b>Co-PI (PI of UChicago Site)</b>
<b>2018-2023</b>	<b>NSF</b>	<b>Collaborative Research: EPIQC: Enabling Practical-Scale Quantum Computation</b>	<b>\$10M</b>	<b>Co-PI (PI Chong)</b>
<b>2017-2020</b>	<b>NSF</b>	<b>Scratch Encore: Equity via a Flexible, Culturally-Relevant Advanced Scratch Curriculum for Upper-Elementary Diverse Students and Teachers</b>	<b>\$734K</b>	<b>PI (Co-PIs at CPS, UMaryland)</b>
<b>2017-2020</b>	<b>NSF</b>	<b>Learning Trajectories for Everyday Computing: Integrating Computational Thinking in Elementary Mathematics</b>	<b>\$2.5M</b>	<b>Co-PI (PI of UChicago Site)</b>
<b>2017-2020</b>	<b>NSF</b>	<b>Collaborative Research: Comprehending Code: The role of reading skills and meta-cognition in programming for struggling learners</b>	<b>\$325K</b>	<b>PI (Co-PI at TX State)</b>
2017-2019	anon.	UChicago Lab School Computational Thinking Initiative	\$279K	Co-PI (PI Abelmann)

2015-2017	NSF	Learning Trajectories for Integrating K-5 Computer Science and Mathematics	\$1.2M	SP (6 Co-PIs at UIUC, UChicago)
2012-2015	NSF	CER: DEPICT: Developing Elementary (Learning) Progressions to Integrate Computational Thinking	\$600K	PI (1 Co-PI in Education)
2011-2012	Army-ICB	Energy-Efficient Microprocessors using Memristive Neural Networks for Prediction	\$140K	Co-PI (PI Chong)
2010-2013	NSF	CCF: Minimal Multithreading - Exploiting Redundancy in Parallel Systems	\$500K	PI (1 Co-PI)
2010-2013	NSF	BPC-DP:Animal Tlatoque: A Synergy between Mesoamerican Cultural History and Endangered Species to attract and retain Latina/os and Females in Computer Science	\$533K	PI (2 Co-PIs, 1 in Dept of Chicana/o Studies)
2007-2012	NSF	CAREER: Horseshoes and Hand Grenades: Exploiting Error Tolerance in Applications	\$300K	PI
2006-2009	NSF	MRI: Acquisition of Computing Resources for Management of Reliability through Data Classification and Voltage Overscaling	\$45K	PI
2003-2007	NSF	NSF-ITR: Synchrosalar: Exploiting Synchronized Clock Domains for Energy Efficient Multirate Embedded Systems	\$300K	Co-PI (PI Chong)

### Products

**Learning Trajectories** for Quantum Superposition, Reversibility, Entanglement, Measurement for K-12 to guide curriculum design

**Learning Trajectories** for Sequence, Conditionals, Iteration, Decomposition, and Debugging for K-12 to guide curriculum design

**Scratch Act 1** – Introductory computing curriculum for 3rd-5th grade students, revision of San Francisco Unified School District’s curriculum to integrate research-based pedagogical approach and learning strategy. Used by schools at SFUSD and Austin Independent School District

**Scratch Encore** – Intermediate culturally-relevant computing curriculum for 5th-8th grade students designed to broaden participation in computing. Used by schools in Chicago Public Schools.

**TIPP&SEE** – Learning Strategy inspired by reading comprehension strategy THIEVES, designed to help upper-elementary school students manage the Scratch programming interface and connect what they see the code do to the code blocks that perform the actions.

**Coderades** – Scratch Charades game for 3rd-5th grade students in which students act out Scratch scripts (code snippets), and other students build those scripts with LEGOs

**Quantum Zines** – Small 8-page pamphlets that introduce quantum computing concepts in broadly accessible ways to broaden participation in computing and quantum computing

### Special Appointments

Years	Position	Type of Service
2015-16	Co-General Chair	Southern California Celebration of Women in Computing
2014	Co-Program Chair	Southern California Celebration of Women in Computing
2014	Co-Program Chair	Computing Frontiers 2014
2008	Program Chair	9th Workshop on Computer Architecture Education

### **PART III. SERVICE**

#### **Public Service** (Including service to K-12 education)

Years	Position	Type of Service
2019	Member	CS4IL Planning Committee
2019	Member	STEM+C PI Meeting Steering Committee
2015-16	Writer	CS K-12 Frameworks (which informs standards)
2014-16	Member	CSTA Computational Thinking Task Force
2014-15	Member	9-dots after-school program advisory board member
2011-15	Member	ACCESS (Alliance for California Computing Education for Students and Schools)

#### **Department Service**

2017-?	Member	Undergraduate Committee
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2015-?     Advisor                             CS Major Advisor  
2016-?     Co-Advisor                             ACM-W

**Initiatives**

Mentoring Program: Jointly with ACM-W, organized annual mentoring program and kick-off event.  
Grace Hopper: Co-organized trip for 27 students to attend Grace Hopper.

**PART IV. RESEARCH CONTRIBUTIONS**

<b>No.</b>	<b>Year</b>	<b>Title and Authors</b>	<b>Publisher</b>	<b>Category</b>
1	1999	“Cache Coherence in Page-Based Intelligent Memory,” D. Keen (Franklin), F. T. Chong, M. Oskin, And J. Hensley.	Eighth Workshop on Scalable Shared-Memory Multiprocessors held in conjunction with the 1999 International Symposium on Computer Architecture.	Refereed Workshop Paper
2	1999	“Exploiting ILP in Page-Based Intelligent Memory,” M. Oskin, J. Hensley, D. Keen (Franklin), F. T. Chong, M. Farrens, And A. Chopra.	32 <sup>nd</sup> Annual International Symposium on Microarchitecture (MICRO-32)	Refereed Conference Paper
2.5*	1999	"FlexRAM: An Advanced Intelligent Memory System.", Yi Kang, Michael Huang, Seung-Moon Yoon, Zhengho Ge, Diana Keen (Franklin), Vinh Lam, Prattap Pattnaik and Josep Torrellas.	International Conference on Computer Design (ICCD).	Refereed Conference Paper
3	1999	“Active Page Architectures for Media Processing,” J. Hensley, M. Oskin, D. Keen (Franklin), And F. T. Chong.	Workshop on Media Processors and DSPs, held with the 32nd Annual International Symposium on Microarchitecture.	Refereed Workshop Paper
4	2000	“Cache Coherence in Intelligent Memory Systems,” D. Keen (Franklin), M. Oskin, J. Hensley, And F. T. Chong.	Workshop on Solving the Memory Wall Problem, held with the International Symposium on Computer Architecture.	Refereed Conference Paper
5	2000	“Reducing Cost And Tolerating Defects in Page-Based Intelligent Memory,” M. Oskin, D. Keen (Franklin), J. Hensley, L. V. Lita, And F. T. Chong.	International Conference on Computer Design.	Refereed Conference Paper
6	2000	“Algorithmic Complexity with Page-Based Intelligent Memory,” M. Oskin, L. V. Lita, F. T. Chong, J. Hensley, And D. Keen (Franklin).	Parallel Processing Letters	Article
7	2001	“Memory Issues in Hardware-Supported Software Safety,” D. Keen (Franklin), F. Chong, P. Devanbu, M. Farrens, J. Brown, J. Hollfelder, And X.-T. Zhuang.	Workshop on Memory Performance Issues, held in conjunction with the 28th Annual International Symposium on Computer Architecture	Refereed Workshop Paper
8	2002	“TOP: A Preliminary Study of Instruction-Level Object Parallelism For Superscalars,” D. Keen (Franklin), And F. Chong.	Workshop on Memory Performance Issues, held with the 29th International Symposium in Computer Architecture.	Refereed Workshop Paper
9	2002	“Operating Systems Techniques For Parallel Computation In Intelligent Memory,” M. Oskin, D. Keen (Franklin), J. Hensley, L. V. Lita, And F. T. Chong.	Parallel Processing Letters	Article

10	2003	“Cache Coherence in Intelligent Memory Systems,” D. Keen (Franklin), M. Oskin, J. Hensley, And F. T. Chong.	IEEE Transactions on Computers	Article
11	2003	“Synchroscalar: Initial Design Lessons in Power-Aware Design of Tile-Based Embedded Architectures,” J. Oliver, R. Rao, P. Sultana, J. Crandall, E. Czernikowski, L. W. Jones, D. Copsy, D. Keen (Franklin), V. Akella, F. T. Chong.	Workshop on Power-Aware Computing Systems (PACS '03) held in conjunction with the International Symposium on Microarchitecture	Refereed Conference Paper
12	2004	“Synchroscalar: A Multiple Clock Domain Power-Aware Tile-Based Embedded Processor,” J. Oliver, R. Rao, P. Sultana, J. Crandall, E. Czernikowski, L. Jones, D. Franklin, V. Akella, And F. T. Chong.	International Symposium on Computer Architecture (ISCA '04)	Refereed Conference Paper
13	2004	“Challenges in Reliable Quantum Computing,” D. Franklin And F. Chong.	In Nano, Quantum and Molecular Computing: Implications to High Level Design and Validation. S. Shukla and I. Bahar, editors. Kluwer Academic Publishers.	Book Chapter
14	2005	“Experiences with the Blackfin Architecture for Embedded Systems Education,” Diana Franklin and John Seng.	In the Twelfth Workshop on Computer Architecture Education	Refereed Workshop Paper
15	2005	“Improving Non-Stationary Data Retrieval in Wireless Sensor Networks,” A. LeBeau, J. Fields, R. Lavering, D. Franklin and J. Seng.	IEEE PerCom Workshop on Sensor Networks and Systems for Pervasive Computing	Refereed Conference Paper
16	2005	“Reliability Requirements of Control, Address and Data Operations in Error Tolerant Applications,” D. D. Thaker, D. Franklin, V. Akella and F. T. Chong.	Workshop on Architectural Reliability in conjunction with MICRO-38	Refereed Conference Paper
17	2005	“Synchroscalar: Evaluation of an Embedded, Multi-core Architecture for Media Applications,” J. Oliver, R. Rao, D. Franklin, V. Akella, and F. T. Chong.	Journal of Embedded Computing	Article
18	2006	“Exploiting Non-Uniform Memory Access Patterns Through Bitline Segmentation,” Ravishankar Rao, Justin Wenck, Diana Franklin, Rajeevan Amirtharajah, and Venkatesh Akella.	In the Workshop on Memory Performance Issues, in conjunction with HPCA (High Performance Computer Architecture), February 2006. Chosen as one of 5 papers to be published in SIGMICRO newsletter.	Refereed Workshop Paper
19	2006	“Segmented Bitline Cache: Exploiting Non-Uniform Memory Access Patterns,” Ravishankar Rao, Justin Wenck, Diana Franklin, Rajeevan Amirtharajah, and Venkatesh Akella.	International Conference on High Performance Computing (HiPC)	Refereed Conference Paper
20	2006	“Case Studies in Cost, Performance, and Reliability,” Diana Franklin.	Computer Architecture - A Quantitative Approach - 4th edition by Hennessy and Patterson, Elsevier Publishers	Book Chapter
21	2006	“Tile Size Selection For Low-Power, Tile-Based Architectures,” J. Oliver, R. Rao, D. Franklin, V. Akella, and F. T. Chong.	International Symposium on the Computing Frontiers (20% acceptance rate)	Refereed Conference Paper

22	2006	“Characterization of Error-Tolerant Applications when Protecting Control Data,” D. Thaker, D. Franklin, J. Oliver, S. Biswas, D. Lockhart, T. Metodi, F. T. Chong.	IEEE International Symposium on Workload Characterization	Refereed Conference Paper
23	2007	“Gender Differences: Recognizing and Developing Potential in Female Students,” Diana Franklin.	Computing Research News, March 2007, Vol. 19, No. 3	Article
24	2007	“Tile Size Selection For Low-Power, Tile-Based Architectures,” J. Oliver, R. Rao, D. Franklin, V. Akella, and F. T. Chong.	Transactions on High-Performance Embedded Architectures and Compilers	Article
25	2008	“Active Pages: Memory-Centric Computation,” Diana Franklin.	Chapter 6.10 of Reconfigurable Computing: The Theory and Practice of FPGA-Based Computation	Book Chapter
26	2008	“Efficient Fault Tolerance in Multi-media Applications through Selective Instruction Replication,” A. Sundarum, A. Akel, D. Lockhart, D. Thaker, and D. Franklin.	Workshop on Radiation Effects and Fault Tolerance in Nanometer Technologies	Refereed Workshop Paper
27	2008	“Preliminary Experiments on Similar Executions with Reduced Off-Chip Accesses in Multi-core Processors,” S. Biswas, F. Chong, D. Franklin, and T. Sherwood.	Workshop on Parallel Execution of Sequential Programs on Multi-core Architectures	Refereed Workshop Paper
28	2008	“Proceedings of the 9 <sup>th</sup> Workshop on Computer Architecture Education,” D. Franklin and E. Gehringer, eds.	ACM	Book
29	2009	“Multi-Execution: Multicore Caching for Data-Similar Executions,” S. Biswas, D. Franklin, A. Savage, R. Dixon, T. Sherwood, F. Chong <a href="http://www.cs.ucsb.edu/~franklin/cv/pubs/isca142-biswas.pdf">http://www.cs.ucsb.edu/~franklin/cv/pubs/isca142-biswas.pdf</a>	International Symposium on Computer Architectures (ISCA'09)	Refereed Conference Paper
30	2009	“Soft Coherence: Preliminary Experiments with Error-Tolerant Memory Consistency in Numerical Applications,” G. Long, F. T. Chong, D. Franklin, J. Gilbert, and D. Fan.	Workshop on Chip Multiprocessor Memory Systems and Interconnects	Refereed Workshop Paper
31	2009	“PSMalloc: Content Based Memory Management for MPI Applications,” S. Biswas, D. Franklin, T. Sherwood, F. Chong, B. Supinski, M. Schulz	MEDEA 2009 Workshop	Refereed Workshop Paper
32	2009	“Conflict-Avoidance in Multicore Caching for Data-Similar Executions,” S. Biswas, D. Franklin, T. Sherwood, F. Chong	International Symposium on Pervasive Systems, Algorithms, and Networks (I-SPAN 2009)	Refereed Conference Paper
33	2010	“eVoices: A Website Supporting Outreach by Attracting Target Groups to Computer Science through Culturally Relevant Themes,” S. Jones, A. Hernandez, P. Ortiz, P. Conrad, G. Aldana, D. Franklin.	Conference of the Southwestern Region of the Consortium for Computing Sciences in Colleges (CCSC-SW 10)	Refereed Conference Paper
34	2010	“A Case for Smartphone Reuse to Augment Elementary School Education,” X. Li, P. Ortiz, J. Browne, D. Franklin, J. Oliver, R. Geyer, Y. Y. Zhou, and F. T. Chong.	Work in Progress in Green Computing, held with the International Conference on Green Computing	Refereed Workshop Paper
35	2010	“Smartphone Evolution and Reuse: Establishing a more Sustainable Model,” X. Li, P. Ortiz, J. Browne, D. Franklin, J. Oliver, R. Geyer, Y. Y. Zhou, and F. T. Chong.	International Workshop on Green Computing (GreenCom 2010)	Invited Workshop Paper

36	2010	“SBLLMalloc, Version 1,” Susmit Biswas, Diana Franklin, Timothy Sherwood, Frederic T. Chong, Bronis R. de Supinski, Martin Schulz.	arch.cs.ucsb.edu/sbllmalloc	Software Release
37	2010	"Minimal Multi-Threading: Finding and Removing Redundant Instructions in Multi-Threaded Processors," Guoping Long, Diana Franklin, Susmit Biswas, Pablo Ortiz, Jason Oberg, Dongrui Fan , Frederic T. Chong	International Symposium On Microarchitecture (MICRO)	Refereed Conference Paper
38	2011	"Animal Tlatoque: Attracting Middle-School Students to Computing through Culturally-Relevant Themes," D Franklin, P Conrad, G Aldana, S Hough, N Avalos Cisneros, F Lopez, A Gonzalez, A Hernandez, S Jones, J Lopez, C Lu, N Moreno, P Ortiz, M Rochin, S Smith	SIGCSE Technical Symposium	Refereed Conference Paper
39	2011	Exercises for Chapter 1, Diana Franklin	Computer Architecture - A Quantitative Approach - 5th edition by Hennessy and Patterson, Elsevier Publishers	Book Chapter
40	2011	Exercises for Appendix C, Diana Franklin	Computer Architecture - A Quantitative Approach - 5th edition by Hennessy and Patterson, Elsevier Publishers	Book Chapter
41	2011	“Exploiting Data Similarity to Reduce Memory Footprints,” Susmit Biswas, Bronis R. de Supinski, Martin Schulz, Diana Franklin, Tim Sherwood, Frederic T. Chong	25th IEEE International Parallel & Distributed Processing Symposium (IPDPS'11)	Refereed Conference Paper
42	2011	“Mitigating the Environmental Impact of Smartphones with Device Reuse,” Xun Li, Pablo Ortiz, Brandon Kuczenski, Diana Franklin, and Frederic T. Chong.	Sustainable Green Computing:Practices, Methodologies and Technologies	Refereed Book Chapter
43	2011	“Teaching-Oriented Faculty at Research Universities,” SIGCSE Teaching-Oriented Faculty Working Group (with contributions by Steve Wolfman, Owen Astrachan, Mike Clancy, Kurt Eiselt, Jeffrey Forbes, Diana Franklin, David Kay, Mike Scott, and Kevin Wayne)	Communications of the ACM	Journal
44	2011	“A Comprehensive Study of Reusing Smartphones to Augment Elementary School Education,” X. Li, P. Ortiz, J. Browne, D. Franklin, J. Oliver, R. Geyer, Y. Y. Zhou, and F. T. Chong.	International Journal of Handheld Computing Research	Refereed Journal Paper
45	2012	“Barely Alive Memory Servers: Keeping Data Active in a Low-Power State,” V. Anagnaostopoulou, S. Biswas, H. Saadeldeen, A. Savage, R. Bianchini, T. Yang, D. Franklin, and F. T. Chong.	ACM Journal on Emerging Technologies in Computing	Refereed Journal Paper
46	2012	“Power-aware Resource Allocation for CPU- and Memory-intense Internet Services,” V. Anagnaostopoulou, S. Biswas, H. Saadeldeen, R. Bianchini, T. Yang, D. Franklin, and F. T. Chong.	International Workshop on Energy-Efficient Data Centres	Refereed Workshop Paper
47	2013	“Assessment of Computer Science Learning in a Scratch-Based Outreach Program,” Diana Franklin, Phillip Conrad, Bryce Boe, Katy Nilsen, Charlotte Hill, Michelle Len, Greg Dreschler, Gerardo Aldana, Paulo Almeida-Tanaka, Brynn Kiefer, Chelsea Laird, Felicia Lopez, Christine Pham, Jessica Suarez, Robert Waite	SIGCSE Technical Symposium	Refereed Conference Paper

48	2013	“Hairball: Lint-inspired Static Analysis of Scratch Projects,” Bryce Boe, Charlotte Hill, Michelle Len, Greg Dreschler, Diana Franklin, Phillip Conrad,	SIGCSE Technical Symposium	Refereed Conference Paper
49	2013	“Practical Guide to Gender Diversity for Computer Science Faculty,” Diana Franklin <a href="http://www.morganclaypool.com/doi/abs/10.2200/S00495ED1V01Y201304PRO002">http://www.morganclaypool.com/doi/abs/10.2200/S00495ED1V01Y201304PRO002</a>	Morgan-Claypool	Edited Book
50	2013	“Memristors for Neural Branch Prediction: A Case Study in Strict Latency and Write Endurance Challenges,” Hebatallah Saadeldeen, Diana Franklin, Guoping Long, Charlotte Hill, Aisha Browne, Dmitri Strukov, Timothy Sherwood and Frederic Chong	Computing Frontiers Harbinger award (best paper)	Refereed Conference Paper
51	2013	“Optimized Code for a Solovay-Kitaev Quantum Rotation Generator,” Daniel Kudrow, Kenneth Bier, Zhaoxia Deng, Diana Franklin, and Frederic T. Chong.	<a href="http://www.cs.ucsb.edu/~dkudrow/downloads/skoptimized.tar.gz">http://www.cs.ucsb.edu/~dkudrow/downloads/skoptimized.tar.gz</a>	Software release
52	2013	“Barely Alive Servers: Greener Datacenters Through Memory-Accessible, Low-Power States,” Vlasia Anagnostopoulou, Susmit Biswas, Heba Saadeldeen, Alan Savage, Ricardo Bianchini, Tao Yang, Diana Franklin and Frederic T. Chong.	Sustainable Green Computing Systems; Springer Verlag Publishers	Refereed Book Chapter
53	2013	“Quantum Rotations: A Case Study in Static and Dynamic Machine-Code Generation for Quantum Computers,” Daniel Kudrow, Kenneth Bier, Zhaoxia Deng, Diana Franklin, Yu Tomita, Kenneth Brown, and Frederic T. Chong	International Symposium on Computer Architecture (ISCA '13)	Refereed Conference Paper
54	2013	“Computational Thinking for Physics: Programming Models of Physics Phenomenon in Elementary School,” Hilary Dwyer, Bryce Boe, Charlotte Hill, Diana Franklin, and Danielle Harlow	Physics Education Research Conference (PERC)	Refereed Conference Paper
55	2014	“Identifying Elementary Students’ Pre-Instructional Ability to Develop Algorithms and Step-by-Step Instructions,” Hilary Dwyer, Charlotte Hill, Stacey Patterson, Danielle Harlow, and Diana Franklin	SIGCSE Technical Symposium	Refereed Conference Paper
56	2014	"ReDHiP: Recalibrating Deep Hierarchy Prediction for Energy Efficiency," Xun Li, Diana Franklin, Ricardo Bianchini, Fred Chong,	IEEE International Parallel & Distributed Processing Symposium (IPDPS)	Refereed Conference Paper
57	2014	"SpongeDirectory: Flexible Sparse Directories Utilizing Multi-Level Memristors," Lunkai Zhang, Dmitri Strukov, Hebatallah Saadeldeen, Dongrui Fan, Mingzhe Zhang, Diana Franklin	Best Paper - Architecture International Conference on Parallel Architectures and Compilation Techniques (PACT 2014)	Refereed Conference Paper
58	2015	“Putting the CS in Computing Education Research,” Diana Franklin	Communications of the Association for Computing Machinery, Viewpoints	Edited Column
59	2015	“Floors and Flexibility: Designing a programming environment for 4th-6th grade classrooms,” Charlotte Hill, Hilary Dwyer, Tim Martinez, Ashley Iveland, Alexandria Killian, Danielle Harlow, and Diana Franklin	SIGCSE Technical Symposium	Refereed Conference Paper
60	2015	“Getting Started Teaching and Researching Computer Science in the Elementary Classroom,” Diana Franklin, Charlotte Hill, Hilary Dwyer, Ashley Iveland, Alexandria Killian, and Danielle Harlow.	SIGCSE Technical Symposium	Refereed Conference Paper



61	2015	“Compiler Management of Communication and Parallelism for Quantum Computation,” Jeff Heckey, Ali JavadAbhari, Shruti Patil, Daniel Kudrow, Ken Brown, Diana Franklin, Frederic T. Chong, and Margaret Martonosi.	Architectural Support for Programming Languages and Operating Systems (ASPLOS)	Refereed Conference Paper
62	2015	“Programming Languages and Discourse: Investigating the Linguistic Context in Learning Computer Science during Elementary School,” Hilary Dwyer, Danielle Harlow, Ashley Iveland, Alexandria Killian, Charlotte Hill, Diana Franklin	AERA (American Education Research Association)	Refereed Poster
63	2015	“Computer Programming in Elementary and Middle School: Connections across Content,” Danielle Harlow, Hilary Dwyer, Anne Leak, Charlotte Hill, Ashley Iveland, Diana Franklin	Improving K-12 STEM educational outcomes through technological integration, Hersey IGI Global	Edited Book
64	2015	“Programming Science Digital Stores: Computer science and engineering design in the science classroom,” Alexandria Hansen, Ashley Iveland, Hilary Dwyer, Diana Franklin, Danielle Harlow.	Science and Children	Refereed Journal
65	2015	“Interactive Design by Children: A Construct Map for Programming,” Alexandria Hansen, Hilary Dwyer, Ashley Iveland, Timothy Martinez, Danielle Harlow, Diana Franklin.	ACM SIGCHI Interactive Design for Children	Refereed Conference Short Paper
66	2015	“Fourth-Grade Students Reading Block-Based Programs: Predictions, Visual Cues, and Affordances,” Hilary Dwyer, Charlotte Hill, Alexandria Hansen, Ashley Iveland, Diana Franklin, Danielle Harlow	International Computer Education Research Conference (ICER 2015)	Refereed Conference Paper
67	2016	“Differentiating for Diversity: Using Universal Design for Learning in K-6 Computer Science Education,” Alexandria Hansen, Hilary Dwyer, Ashley Iveland, Diana Franklin, Danielle Harlow.	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
68	2016	“Initialization in Scratch: Seeking Knowledge Transfer,” Diana Franklin, Charlotte Hill, Hilary Dwyer, Ashley Iveland, Alexandria Hansen, Danielle Harlow.	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
69	2016	“User-Centered Design in Block-Based Programming: Developmental & Pedagogical Considerations for Children,” Alexandria Hansen, Diana Franklin, Danielle Harlow.	ACM SIGCHI Interactive Design for Children (ICS)	Refereed Conference Paper
70	2016	“Mellow Writes: Extending Lifetime in Resistive Memories through Selective Slow Write Backs,” Lunkai Zhang, Brian Neely, Diana Franklin, Dmitri Strukov, Yuan Xie, Fred Chong	International Symposium on Computer Architecture (ISCA'16)	Refereed Conference Paper
71	2017	“Assessing Children’s Understanding of the Work of Computer Scientists: The Draw-a-Computer-Scientist Test,” Alexandria Hansen, Hilary Dwyer, Ashley Iveland, Mia Talesfore, Lacy Wright, Danielle Harlow, Diana Franklin.	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
72	2017	“Covering Edge Cases: An Analysis of Computer Science Learning Goals Theorized and Tested in Literature,” Kathryn Rich, Carla Strickland, Diana Franklin.	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
73	2017	“Using Upper-Elementary student performance to understand conceptual sequencing in a blocks-based Curriculum,” Diana Franklin, Gabriela Skifstad, Reiny Rolock, Isha Mehrotra, Valerie Ding, Alexandria Hansen, David Weintrop, Danielle Harlow.	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper

74	2017	“K-8 Learning Trajectories Derived from Research Literature: Sequence, Repetition, Conditionals,” Katherine M. Rich, Carla Strickland, Andrew Binkowski, Cheryl Moran, Diana Franklin.	International Conference on Computer Education Research (ICER '17)	Refereed Conference Paper
75	2017	“Designing Quantum Programming Languages and Compilers Given Hardware Constraints,” Frederic T. Chong, Diana Franklin, Margaret Martonosi.	Nature, Vol. 549 No. 7671 pp 180-187	Refereed Journal
76	2017	“Optimized Surface Code communication in Superconducting Quantum Computers,” Ali Javadi-Abhari, Pranav Gokhale, Adam Holmes, Diana Franklin, Ken Brown, Margaret Martonosi, Frederic T. Chong	International Symposium on Microarchitecture (MICRO)	Refereed Conference Paper
77	2018	“Evaluating CoBlox: A Comparative Study of Robotics Programming Environments for Adult Novices,” David Weintrop, Patrick Francis, Bo Li, Afsoon Afzal, David Shepherd, Jean Salac, Diana Franklin.	ACM CHI Conference on Human Factors in Computing Systems (CHI 2018)	Refereed Conference Paper
78	2018	“Decomposition: A K-8 Computational Thinking Learning Trajectory,” Kathryn M. Rich, T. Carla Strickland, T. Andrew Binkowski, Diana Franklin.	International Conference on Computer Education Research (ICER '17)	Refereed Conference Paper
79	2018	“Starting from Scratch: Outcomes of Early Computer Science Learning Experiences and Implications for What Comes Next,” David Weintrop, Alexandria K. Hansen, Danielle B. Harlow, Diana Franklin.	International Conference on Computer Education Research (ICER '17)	Refereed Conference Paper
80	2018	“Ecological Design-Based Research for Computer Science Education: Affordances and Effectivities for Elementary School students,” Danielle Harlow, Hillary Dwyer, Alexandria Hansen, Ashley Iveland, Diana Franklin.	Cognition and Instruction, pages 1-23	Refereed Journal
81	2018	“Magic-State Functional Units: Mapping and Scheduling Multi-Level Distillation Circuits for Fault-Tolerant Quantum Architectures,” Yongshan Ding, Adam Holmes, Ali Javadi-Abhari, Diana Franklin, Margaret Martonosi, Frederic T. Chong	International Symposium on Microarchitecture (MICRO)	Refereed Conference Paper
82	2019	“A K-8 Debugging Learning Trajectory Derived from Research Literature,” Katherine M. Rich, Carla Strickland, Andrew Binkowski, Diana Franklin.	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
83	2019	“An Analysis through an Equity Lens of the Implementation of Computer Science in K-8 Classrooms in a Large, Urban School District,” Jean Salac, Max White, Ashley Wang, Diana Franklin.	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
84	2019	“Resource Optimized Quantum Architectures for Surface Code Implementations of Magic-State Distillation,” Adam Holmes, Yongshan Ding, Ali Javadi-Abhari, Diana Franklin, Margaret Martonosi, and Frederic T. Chong.	Microprocessors and Microsystems	Article
85	2019	“Enacting Identities: Participatory Design as a Context for Youth to Reflect, Project, and Apply their Emerging Identities,” Merijke Coenraad, Jennifer Palmer, Diana Franklin, David Weintrop.	Interactive Design for Children (IDC 2019)	Refereed Conference Paper

## Accepted Publications

86	2019	“The Teacher Accessibility, Equity, and Content (TEC) Rubric for Evaluating Computing Curricula.” David Weintrop, Merijke Coenraad, Jennifer Palmer, & Diana Franklin	ACM Transactions on Computing Education (TOCE)	Refereed Journal
87	2019	“Scratch Encore: The Design and Pilot of a Culturally-Relevant Intermediate Scratch Curriculum,” Diana Franklin, Jen Palmer, Merijke Coenraad, Melissa Cobian, Kristan Beck, Andrew Rasmussen, Susan Krause, Max White, Marco Anaya, Zachary Crenshaw	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
88	2019	“TIPP&SEE: A Learning Strategy to Guide Students through Use->Modify Scratch Activities,” Jean Salac, Cathy Thomas, Choe Butler, Ashley Sanchez, Diana Franklin	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
89	2019	“Eliciting Student Scratch Script Understandings via Scratch Charades,” Diana Franklin, Jean Salac, Cathy Thomas, Zene Sekou, Susan Krause	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
90	2019	“Patterns in Elementary-Age Student Responses to Personalized & Generic Code Comprehension Questions,” Jean Salac, Qi Jin, Zipporah Klain, Saranya Turimella, Max White, & Diana Franklin	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper
91	2019	“Comprehending Code: Understanding the Relationship between Reading and Math Proficiency, and 4th-Grade CS Learning Outcomes,” Jean Salac, Cathy Thomas, Bryan Twwarek, William Marsland, & Diana Franklin	Symposium on Computer Science Education (SIGCSE)	Refereed Conference Paper