

Douglas Michael Densmore

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US Citizen

Academic Experience

- **Boston University** Boston, Massachusetts USA
Associate Professor in the Department of Electrical and Computer Engineering 9/10 - Present
Kern Faculty Fellow; Core Faculty Center of Synthetic Biology (CoSBi)
 - Affiliated Faculty in the Department of Biomedical Engineering, Bioinformatics, and MCBB
 - Synthetic Biology Engineering Research Center (SynBERC) Affiliated Investigator
 - Head of the Cross-disciplinary Integration of Design Automation Research (*www.cidarlab.org*) group
 - Developing tools for the specification, design, and assembly of synthetic biological systems using electronic design automation based techniques.
- **Joint BioEnergy Institute (JBEI)** Emeryville, California USA
Synthetic Biology Engineering Research Center (SynBERC) Postdoctoral Fellow 9/09 - 6/10
- **University of California, Berkeley** Berkeley, California USA
UC Chancellor's Postdoctoral Fellow 5/07 - 9/09

Education

- **University of California, Berkeley** Berkeley, California USA
Ph.D., Electrical Engineering 9/01 - 5/07
 - **Dissertation:** “A Design Flow for the Development, Characterization, and Refinement of System Level Architectural Services”
 - **Advisor:** Prof. Alberto Sangiovanni-Vincentelli
 - **Major:** Computer-Aided Design for VLSI
 - **Inside Minor:** Computer Architecture
 - **Outside Minor:** Management of Technology (MOT Certification)
- **University of California, Berkeley** Berkeley, California USA
M.S., Electrical Engineering 9/01 - 5/04
 - **Thesis:** “Platform Based Reconfigurable Architecture Exploration Via Boolean Constraints”
 - **Thesis Committee:** Prof. Alberto Sangiovanni-Vincentelli and Prof. John Wawrzynek
- **University of Michigan** Ann Arbor, Michigan USA
B.S.E., Computer Engineering 8/96 - 4/01

Recognition

Awards

- ACM Senior Member 2015
- IEEE Senior Member 2014
- National Academy of Engineering (NAE) U.S. Frontiers of Engineering Symposium Participant 2013
- Boston University Ignition Award
- Boston University College of Engineering Early Career Research Excellence Award
- NSF Faculty Early Career Development (CAREER) Award 2013
- Hariri Institute for Computing and Computational Science and Engineering Junior Faculty Fellow 2012-2014
- Boston University Dean's Catalyst Award 2012
- Boston University ECE Award for Excellence in Teaching 2012
- Richard and Minda Reidy Family Career Professor 2010-2013
- International Genetically Engineered Machine Competition “Best Software” 2008, 2009, 2011
- International Genetically Engineered Machine Competition Gold Medals 2008, 2009, 2011, 2012, 2013, 2014
- **Eagle Scout Award** - Boy Scouts of America

Fellowships

- University of California Chancellor's Postdoctoral Fellowship 2007-2009
- Intel Foundation PhD Fellowship 2006-2007
- Intel Masters Award Program (IMAP) Fellowship 2001-2004
- GEM Fellowship with Intel Corporation sponsorship 2001
- Scholar Recognition Award (full tuition) - University of Michigan 1996-2001
- Martin Luther King Alumni Scholarship - University of Michigan 1996

Grants and Contracts

1. *Collaborative Research: Evolvable Living Computing - Understanding and Quantifying Synthetic Biological Systems' Applicability, Performance, and Limits*, **NSF Expeditions in Computing**, ~\$10 million over five years. **Full Proposal Under Review**

2. *CPS Frontier: Collaborative Research: BioCPS for Engineering Living Cells*, **National Science Foundation**, \$1,561,548, 2015-2019.
3. *The MIT-Broad Foundry TA2*, **DARPA 1000 Molecules**, \$842,439, 2015-2020.
4. *Computational Synthetic Biological Microfluidics*, **Hariri Institute for Computing**, \$32,320, 2014.
5. *iCorps: Lattice Automation High Throughput DNA Cloning Solutions*, **NSF iCorps Program**, \$50,000, 10/1/13 - 3/31/14.
6. *Commercializing High Throughput, Combinatorial, Constraint-based DNA Cloning Using Clotho*, **BU Ignition Award**, \$50,000, 2013.
7. *Design Automation Infrastructure for DNA Assembly in Synthetic Biology*, **National Science Foundation**, NSF CAREER Award, \$911,608, 2013-2018.
8. *Microfluidic Biocomputing: Large-Scale Biofluidic Circuits for Programmable Logic Devices*, **BU Dean's Catalyst Award**, \$35,000, 5/1/12 - 4/30/13.
9. *International Workshop on Bio-Design Automation (IWBD A)*, **National Science Foundation**, NSF CCF (1240677), \$24,000, 5/1/12-5/30/15. **Awarded Three Times**
10. *Flow Cytometry Machinery to Enable Characterization Driven Synthetic Biology Software Design Flow*, **Office of Naval Research**, ONR BAA-AFOSR-2011-0, \$419,220, 5/16/12 - 4/15/13.
11. *Establishment of an MIT Foundry for Massively Multi-Part System Engineering*, **DARPA Living Foundries**, \$250,211 (BU portion), 4/1/2012 - 9/30/14.
12. *Collaborative Research: ABI Development: A Modular, Community Based Design Platform for Synthetic Biology (Clotho)*, **National Science Foundation**, NSF-10-567, \$1,098,166 (BU portion), 2/1/12-1/31/15. **Outstanding designation (top 7% of 229+ submissions).**
13. *Augmenting and Extending the Eugene Domain Specific Language for Synthetic Biology*, **Agilent Applications and Core Technology University Research (ACT-UR) Funding**, \$56,520, 1/1/12 to 12/31/12 + \$40,000 1/1/13 to 12/31/13. **Twice Awarded**
14. *Utilizing Synthetic Biology to Create Programmable Micro-Bio-Robots*, **Office of Naval Research**, ONR-BAA-10-026, \$4.5M (3 year base), \$3M (2 year option), \$7.5M (total).
15. *Multi-input, Multimodal, Mammalian Information Processing Circuits*, **MIT/DARPA**, DARPA-BAA-11-23, Total Project Period: September 1, 2011 through August 13, 2015, \$292,734 (~\$4,253,348 total).
16. *A Tool-Chain to Accelerate Synthetic Biological Engineering (TASBE)*, **Raytheon/DARPA**, DARPA BAA 10-61, Source: 1982-5, Total Project Period: September 23, 2010 through September 21, 2011, \$61,693 (~\$1,000,000 total).

BOOKS

1. Heinz Koepl, **Douglas Densmore**, Mario di Bernardo, Gianluca Setti (editors), *Design and Analysis of Bio-Molecular Circuits*, Springer Books, **ISBN: 978-1-4419-6765-7**, 2011.
2. **Douglas Densmore**, Abhijit Davare, *A Platform-Based Design Methodology for the Electronic System Level: Frameworks, Design Flows, and Case Studies*, VDM Verlag Dr. Mueller, **ISBN: 3836473143**, 2008.

BOOK CHAPTERS

3. Felice Balarin, Massimiliano D'Angelo, Abhijit Davare, **Douglas Densmore**, Trevor Meyerowitz, Roberto Passerone, Alessandro Pinto, Alberto Sangiovanni-Vincentelli, Alena Simalatsar, Yosinori Watanabe, Guang Yang, Qi Zhu, *Platform-Based Design and Frameworks: Metropolis and Metro II*, Model-Based Design of Heterogeneous Embedded Systems, Gabriela Nicolescu, Pieter Mosterman (Eds.), CRC Press, **ISBN: 9781420067842**, 2009.
4. **Douglas Densmore**, Adam Donlin, Alberto Sangiovanni-Vincentelli, *Programmable Platform Characterization for System Level Performance Analysis*, Platform Based Design at the Electronic System Level, Mark Burton and Adam Morawiec (Eds.), Springer Books, **ISBN: 1402051379**, 2006, pg. 13-30.

JOURNAL ARTICLES

5. Swapnil Bhatia, Micheal J. Smanski, Christopher A. Voigt, **Douglas Densmore**, *READ Algorithm for Computational Design*, 2015. **In Preparation**
6. Sonya Iverson, Traci Haddock, **Douglas Densmore**, *A Collection of Modular DNA Parts for Rapid Iterative Assembly*, 2015. **In Preparation**
7. Prashant Vaidyanathan, Bryan Der, Swapnil Bhatia, Nicolas Roehner, Ryan Silva, Christopher A. Voigt, Douglas Densmore, *A Framework for Genetic Logic Synthesis*, Proceedings of IEEE, 2015. **In Submission**
8. Jacob Beal, Tyler E. Wagner, Tasuku Kitada, Odisse Azizgolshani, Jordan Moberg Parker, **Douglas Densmore**, Ron Weiss, *Model-driven Engineering of Gene Expression from RNA Replicons*, ACS Synthetic Biology, 2015, 4 (1), pp 4856. **PMID: 24877739**
9. Haiyao Huang, **Douglas Densmore**, *Integration of Microfluidics into the Synthetic Biology Design Flow*, RSC Lab on a Chip, vol. 14, iss. 18, pp. 3459-3474, 2014. **PMID 25012162**
10. Haiyao Huang, **Douglas Densmore**, *Fluigi: Microfluidic Device Synthesis for Synthetic Biology*, ACM Journal on Emerging Technologies in Computing Systems (JETC), vol. 11, iss. 3, p. 26:126:19, 2014.
11. Ernst Oberortner, Swapnil Bhatia, Erik Lindgren, **Douglas Densmore**, *Rule-based Design of Synthetic Biological Systems*, ACM Journal on Emerging Technologies in Computing Systems (JETC), vol. 11, iss. 3, p. 25:125:19, 2014.
12. Ernst Oberortner, **Douglas Densmore**, *miniEugene: Constraint-based Design of Synthetic Biological Systems*, ACS Synthetic Biology, 2014. **PMID: 25426642**
13. Evan Appleton, Jenhan Tao, Carter F. Wheatley, Devina H. Desai, Pooja D. Shah, Thomas M. Lozanoski, Jake A. Awtry, Shawn S. Jin, Traci L. Haddock, **Douglas Densmore**, *Owl: Electronic Datasheet Generator for Synthetic Biology*, ACS Synthetic Biology, 2014. **PMID: 25524100**
14. Michael J. Smanski, Swapnil Bhatia, YongJin Park, Dehua Zhao, Georgia Giannoukos, Dawn Ciulla, Michele Busby, Johnathan Calderon, Robert Nicol, D. Benjamin Gordon, **Douglas Densmore**, and Christopher A. Voigt, *Functional Optimization of Gene Clusters by Combinatorial Design and Assembly*, Nature Biotechnology, 32, 12411249, 2014. **PMID: 25419741**

15. Evan Appleton, Jenhan Tao, Traci Haddock, **Douglas Densmore**, *Interactive Assembly Algorithms for Molecular Cloning*, Nature Methods, June, 11(6):657-62, 2014. **PMID: 24776633**
16. Michal Galdzicki, **Douglas Densmore**, Herbert Sauro, (+ 16 others), *The Synthetic Biology Open Language (SBOL) provides a community standard for communicating designs in synthetic biology*, Nature Biotechnology, 2014. **PMID: 24911500**
17. **Douglas Densmore**, Swapnil Bhatia, *Bio-Design Automation: Software + Biology + Robots*, Trends in Biotechnology, 22 November 2013. **PMID: 24269087**
18. Swapnil Bhatia, **Douglas Densmore**, *Pigeon: a schematic visualizer for synthetic biology*, ACS Synthetic Biology, 2013. **PMID: 23654259**
19. Mariana Leguia, Jennifer Brophy, **Douglas Densmore**, Angel Asante and J. Christopher Anderson, *2ab Assembly: A Methodology for Automatable, High-throughput Assembly of Standard Biological Parts*, Journal of Biological Engineering, 7:2, 2013. **PMID: 23305072**. *Highly accessed*.
20. Abhijit Davare, **Douglas Densmore**, Lianpeng Guo, Roberto Passerone, Alberto L. Sangiovanni-Vincentelli, Alena Simalatsar, Qi Zhu, *MetroII: A Design Environment for Cyber-Physical Systems*, ACM Transactions on Embedded Computing Systems, Volume 12, Issue 1, March 2013.
21. Jacob Beal, Ron Weiss, **Douglas Densmore**, Aaron Adler, Evan Appleton, Jonathan Babb, Swapnil Bhatia, Noah Davidsohn, Traci Haddock, Joseph Loyall, Richard Schantz, Viktor Vasilev, and Fusun Yaman, *An End-to-End Workflow for Engineering of Biological Circuits from High-Level Specifications*, ACS Synthetic Biology, 2012 (8), 317-331. **PMID: 23651286**
22. Fusun Yaman, Swapnil Bhatia, Aaron Adler, **Douglas Densmore**, Jake Beal, *Automated Selection of Synthetic Biological Parts for Genetic Regulatory Networks*, ACS Synthetic Biology, 2012 1 (8), 332-344. **PMID: 23651287**
23. **Douglas Densmore**, Soha Hassoun, *Design Automation for Synthetic Biological Systems*, IEEE Design and Test of Computers, vol.29, no.3, pg.7-20, June 2012.
24. Joanna Chen, **Douglas Densmore**, Timothy S. Ham, Jay D. Keasling, and Nathan J. Hillson, *DeviceEditor Biological CAD Canvas*, Journal of Biological Engineering, 6:1, February 28th, 2012. **PMID: 22373390**
25. Lesia Bilitchenko, Adam Liu, Sherine Cheung, Emma Weeding, Bing, Xia, Mariana Leguia, J. Christopher Anderson, **Douglas Densmore**, *Eugene - A Domain Specific Language for Specifying and Constraining Synthetic Biological Parts, Devices, and Systems*, PLoS ONE, Volume 6, Issue 4, April, 2011. **PMID: 21559524**
26. Mariana Leguia, Jennifer Brophy, **Douglas Densmore** and J. Christopher Anderson, *Automated Assembly of Standard Biological Parts*, Methods in Enzymology, Volume 498, 2011. **PMID: 21601686**
27. Lesia Bilitchenko, Adam Liu, and **Douglas Densmore**, *The Eugene Language for Synthetic Biology*, Methods in Enzymology, Volume 498, 2011. **PMID: 21601677**
28. Bing Xia, Swapnil Bhatia, Ben Bubenheim, Maisam Dadgar, **Douglas Densmore**, and J. Christopher Anderson, *Clotho: A Software Platform for the Creation of Synthetic Biological Systems, A Developers and Users Guide for Clotho v2.0*, Methods in Enzymology, Volume 498, 2011. **PMID: 21601675**
29. **Douglas Densmore**, Timothy H.-C. Hsiau, Joshua T. Kittleston, Will DeLoache, Christopher Batten, J.Christopher Anderson, *Algorithms for Automated DNA Assembly*, Nucleic Acids Research (2010) 38 (8): 2607-2616. **PMID: 203351622010**
30. **Douglas Densmore**, Roberto Passerone, Alberto Sangiovanni-Vincentelli, *A Platform-Based Taxonomy for ESL Design*, IEEE Design and Test of Computers, Vol. 23, No. 5, September/October 2006, pg. 359-374.

CONFERENCE PAPERS

31. O. Shaer, C. Valdes, S. Liu, K. Lu, K. Chang, W. Xu, T. L. Haddock, S. Bhatia, **D. Densmore**, R. Kincaid, *Designing Reality-Based Interfaces for Experiential Bio-Design*, Personal and Ubiquitous Computing, pp. 1-18, 2013.
32. Ebru Aydin Gol, **Douglas Densmore**, Calin Belta, *Data-driven Verification of Synthetic Gene Networks*, 52nd IEEE Conference on Decision and Control (CDC), Firenze, Italy, 2013.
33. Ernst Oberortner, Swapnil Bhatia, **Douglas Densmore**, J. Christopher Anderson, *A New Architecture for the Clotho Software Platform: A Pattern-based Architecture Review*, Pattern Languages of Programs Conference (PLoP), 2012.
34. Boyan Yordanov, Evan Appleton, Rishi Ganguly, Ebru Aydin Gol, Swati Banerjee Carr, Swapnil Bhatia, Traci Haddock, Calin Belta, **Douglas Densmore**, *Experimentally Driven Verification for Synthetic Biological Circuits*, Design, Automation, and Test Europe (DATE) 2012, Dresden Germany, March 2012. **21% acceptance rate**
35. **Douglas Densmore**, Joshua T. Kittleson, Lesia Bilitchenko, Adam Liu, J. Christopher Anderson, *Rule Based Constraints for the Construction of Genetic Devices*, IEEE International Symposium on Circuits and Systems (ISCAS) 2010, Paris France, May 2010.
36. **Douglas Densmore**, J. Christopher Anderson, *Combinational Logic Design in Synthetic Biology*, IEEE International Symposium on Circuits and Systems (ISCAS) 2009, Taipei Taiwan, May 2009.
37. **Douglas Densmore**, Alena Simalatsar, Abhijit Davare, Roberto Passerone, Alberto Sangiovanni-Vincentelli, *UMTS MPSoC Design Evaluation Using a System Level Design Framework*, Design, Automation, and Test Europe (DATE) 2009, Nice France, April 2009. **27% acceptance rate**
38. **Douglas Densmore**, Anne Van Devender, Matthew Johnson, Nade Sritanyaratana, *A Platform-Based Design Environment for Synthetic Biological Systems*, TAPIA '09: Proceedings of the 2009 Conference on Diversity in Computing, ACM, Portland Oregon, April 2009.
39. Alena Simalatsar, **Douglas Densmore**, Roberto Passerone, *A Methodology for Architecture Exploration and Performance Analysis Using System Level Design Languages and Rapid Architecture Profiling*, Third International IEEE Symposium on Industrial Embedded Systems (SIES) 2008, La Grande Motte France, June 2008.
40. Abhijit Davare, **Douglas Densmore**, Trevor Meyerowitz, Alessandro Pinto, Alberto Sangiovanni-Vincentelli, Guang Yang, Haibo Zeng, Qi Zhu, *A Next-Generation Design Framework for Platform-Based Design*, Conference on Using Hardware Design and Verification Languages (DVCon) 2007, San Jose California, February 2007.
41. Shinjiro Kakita, Yosinori Watanabe, **Douglas Densmore**, Abhijit Davare, Alberto Sangiovanni-Vincentelli, *Functional Model Exploration for Multimedia Applications via Algebraic Operators*, Sixth International Conference on Application of Concurrency to System Design (ACSD) 2006, Turku Finland, June 2006.
42. **Douglas Densmore**, Adam Donlin, Alberto Sangiovanni-Vincentelli, *FPGA Architecture Characterization for System Level Performance Analysis*, Design, Automation, and Test Europe (DATE) 2006, Munich Germany, March 2006. **16% acceptance rate.**
43. **Douglas Densmore**, Sanjay Rekhi, Alberto Sangiovanni-Vincentelli, *Microarchitecture Development via Metropolis Successive Platform Refinement*, Design, Automation, and Test Europe (DATE) 2004, Paris France, February 2004. **17% acceptance rate.**

TECHNICAL REPORTS

44. **Douglas Densmore**, Trevor Meyerowitz, Abhijit Davare, Qi Zhu, Guang Yang, *Metro II Execution Semantics for Mapping*, Technical Report No. UCB/EECS-2008-16, EECS Department, University of California, Berkeley, February 18, 2008.

45. Abhijit Davare, Jike Chong, Qi Zhu, **Douglas Densmore** and Alberto L. Sangiovanni-Vincentelli, *Classification, Customization, and Characterization: Using MILP for Task Allocation and Scheduling*, Technical Report No. UCB/EECS-2006-166, EECS Department, University of California, Berkeley, December 11, 2006.
46. Abhijit Davare, **Douglas Densmore**, Vishal Shah, Haibo Zeng, *A Simple Case Study in Metropolis*, Technical Report No. UCB/ERL M04/37, EECS Department, University of California, Berkeley, September 2004.
47. **Douglas Densmore**, *Metropolis Architecture Refinement Styles and Methodology*, Technical Report No. UCB/ERL M04/36, EECS Department, University of California, Berkeley, September 14, 2004.
48. **Douglas Densmore**, *Formal Refinement Verification in Metropolis*, Technical Report No. UCB/ERL M04/10, EECS Department, University of California, Berkeley, May 22, 2004.

PATENTS

49. Adam Donlin, **Douglas Densmore**, *Method and Apparatus for Precharacterizing Systems for Use in System Level Design of Integrated Circuits*, Issued Aug 31, 2010, **Patent Number 7,788,625**.

MAGAZINE ARTICLES/LETTERS

50. **Douglas Densmore**, *Bio-Design Automation: No One Said This Would Be Easy*, ACS Synthetic Biology, 2012 1 (8), 296-296. **PMID: 23651283**
51. **Douglas Densmore**, Soha Hassoun, *Guest Editors' Introduction: Synthetic Biology*, IEEE Design and Test of Computers 29(3): 5-6 (2012).
52. Jean Peccoud, J. Christopher Anderson, Deepak Chandran, **Douglas Densmore**, Michal Galdzicki, Matthew W Lux, Cesar A Rodriguez, Guy-Bart Stan, and Herbert M Sauro, *Essential information for synthetic DNA sequences*, Nature Biotechnology, Volume: 29, Page: 22 Year published: 2011. **PMID: 21221092**
53. John Wang, Bing Xia, Terry Johnson, **Douglas Densmore**, J. Christopher Anderson, *Swiss Army Bacteria and Mythical Software*, California Engineer, Volume 88, Issue 2, Winter 2009, pg. 11-17.
54. **Douglas Densmore**, Alberto Sangiovanni-Vincentelli, Adam Donlin, *Leveraging Programmability in Electronic System Level Designs*, Xcell Journal, Q1-2006, Issue 56, pg. 29-31.

Teaching

- Boston University, EK 100 - Freshman Advising Seminar (2012, 2013)
- Boston University, EC 311 - Introduction to Digital Logic Design (**4.72/5 instructor rating**)
- Boston University, EC 551 - Advanced Digital Design with Verilog and FPGAs (**4.53/5 instructor rating**)
- Boston University, EC 327 - Introduction to Software Engineering (**4.15/5 instructor rating**)

Tools

- Clotho - Store, Exchange, and Interact with Synthetic Biological Data - www.clothocad.org
- Eugene - A Domain-Specific Language for Biological Device Design - www.eugenecad.org
- Raven - DNA Assembly Planning for Binary and Multi-way Assembly Strategies - www.ravencad.org
- Cello - Genetic Circuit Compiler - www.cellocad.org
- Pigeon - A Text-to-Image Generator for Synthetic Biological Devices - www.pigeoncad.org
- Owl - Automatically Build Synthetic Biology Datasheets - www.owlcad.org

Professional Activities and Service

Board of Directors

- Lattice Automation, Inc (*www.latticeautomation.com*) - Co-Founder, President (2013-Present)
- Bio-Design Automation Consortium (BDAC) - Co-founder, President (2012-Present)
- Nona Research Foundation - Founder, President (2012-Present)

Consultant Positions

- Machina.Bio, San Francisco, CA
- Genomatica, San Diego, CA
- Life Technologies, Carlsbad, CA
- Kocoon Tech - *kocoontech.com*

Conference/Workshop Organization

- International Workshop on Bio-Design Automation (IWBDA) 2009, 2010, 2011, 2012, 2013, 2014, 2015 - **General Chair, Secretary, Co-Founder, and Steering Committee**
- Synthetic Biology: Engineering, Evolution & Design (SEED) 2015 -**Organizing Committee**
- BioCom²: NSF Workshop on Biological Computations and Communications 2012 - **Co-organizer**
- Special Interest Group for ISMB2012 (“Biological Systems Design”) 2012 - **Organizing Committee**

Editorial Positions

- Software Division Director for the International Genetically Engineered Machine Competition 2011-2013
- ACS Synthetic Biology Editorial Advisory Board Member 2011-Present
- ACS Synthetic Biology - Editor (Bio-Design Automation Special Issue), vol. 1, no. 8, August 2012
- IEEE Design and Test - Editor (Synthetic Biology Special Issue), vol.29, no.3, June 2012

Technical Program Committee/Reviewer

Technical Program Committee

- 17th Euromicro Conference on Digital System Design (EuroMicro) 2014
- Functional Programming Concepts in Domain-Specific Languages 2013 (FPCDSL)
- 8th International Symposium on Bioinformatics Research and Applications (ISBRA 2012)
- Design Automation Conference (DAC) 2011
- International Genetically Engineered Machine (iGEM) competition judge 2010, 2012, 2013
- International Conference on Computer Aided Design (ICCAD) 2009, 2010, 2011, 2012 (Novel Circuits and Biosystems)
- IEEE International Conference on Emerging Technologies and Factory Automation (ETFFA) 2009

Reviewer

- Nature Methods 2014
- Bioinformatics 2013
- ACS Synthetic Biology 2012, 2013, 2014
- Journal of Biological Engineering 2012
- PLoS One 2011
- BMC Systems Biology 2011
- International Conference on Hardware/Software Codesign and System Synthesis (CODES) 2005, 2006, 2007
- International Conference on Computer Aided Design (ICCAD) 2005, 2009, 2010, 2011, 2012
- ACM Transactions on Embedded Computing Systems (TECS) 2004 (1), 2009 (2)
- ACM Transactions on Design Automation of Electronic Systems (TODAES) 2009

Industry Experience

- **Xilinx Research Labs** San Jose, California USA
Research Intern 5/04 - 8/04
 - Created performance characterization methodology for Xilinx FPGA based components.
- **Cypress Semiconductor** San Jose, California USA
Research Intern 6/02 - 9/02
 - Provided feedback to Cypress on the METROPOLIS design methodology versus their RTL flow.
- **Intel Corporation** Hillsboro, Oregon USA
System Validation Engineer 5/01 - 8/01
 - Developed tools for the Platform Desktop System Validation team to use in its debug flow.
- **Intel Corporation** Folsom, California USA
Integrated Components Design Engineer 5/00 - 8/00
 - Validated Intel chipset hardware DFT modes in VHDL and Verilog environments.
- **Intel Corporation** Folsom, California USA
Software Systems Engineer 5/99 - 8/99
 - Responsible for 1st level debug of the Intel UltraATA Storage Performance Driver.
- **Intel Corporation** Folsom, California USA
Customer Support Engineer 5/98 - 12/98
 - Provided primary first level technical support for the Intel740 graphics accelerator, Intel PCI/AGP chipsets, and Intel Architecture (processors).

Technical Presentations (Selected)

Conferences

1. “*Bio-CAD Hands-On Tutorial*”
Keystone Precision Genome Engineering and Synthetic Biology, January 2015
2. “*Software + Robots + Biology*”
Synthetic Biology 6.0 (SB6.0), July 2013
3. “*CAD For Synthetic Biology*”
Keystone Precision Genome Engineering and Synthetic Biology, March 2013
4. “*Experimentally Driven Verification for Synthetic Biological Circuits*”
Design, Automation, and Test Europe (DATE) 2012, March 2012
5. “*Tools for Synthetic Biology*”
Synthetic Biology 5.0 (SB5.0), June 2011
6. “*Rule Based Constraints for the Construction of Genetic Devices*”
International Symposium on Circuits and Systems (ISCAS) 2009, May 2010
7. “*Eugene: A Domain Specific Language for Specifying Biological Constructs at Higher Levels of Abstraction*”
Advances in Synthetic Biology, March 2010
8. “*Combinational Logic Design in Synthetic Biology*”
International Symposium on Circuits and Systems (ISCAS) 2009, May 2009
9. “*A Platform-Based Design Environment for Synthetic Biological Systems*”
2009 Richard Tapia Celebration of Diversity in Computing Conference, April 2009
10. “*System Level Synthesis: Functions, Architectures, and Communication*” (Tutorial Session)
Asia, South Pacific Design Automation Conference (ASPDAC) 2008, January 2008
11. “*Microarchitecture Development via Metropolis Successive Platform Refinement*”
Design, Automation, and Test Europe (DATE) 2004, February 2004

Invited Talks

12. “*Make biology: Bio-Design Automation in Synthetic Biology*”
Intel Corporation, November 2014
13. “*Bio-Design Automation Industrial Opportunities*”
Dow AgroSciences, February 2014
14. “*Programming Life: The Revolutionary Potential of Synthetic Biology*”
Discover Magazine Panel, March 2013
15. “*Clotho*”
SynBioBeta, November 2012
16. “*Specification, Design, and Assembly Automation Workflows in Synthetic Biology*”
Society for Industrial Microbiology Annual Meeting and Exhibition, August 2012
17. “*Bio CAD-CAM: Computational Approaches for Functional, Correct by Design Synthetic Biology*”
ONR/ARO/AFOSR Synthetic/Engineering Biology Workshop, June 2012
18. “*Specification, Design, and Assembly: An Introduction to the Clotho Design Flow*”
Genomatica, Lincoln Labs, Summer 2012
19. “*Circuits, Code, and Cells*”
Life Technologies, Summer 2011
20. “*EDA to BDA*”
Boston University, Wellesley, Fall 2010
21. “*Platform-Based Design: From Cruise Control to Cancer Killer*”
Boston University, BBN Technologies, Georgia Tech, Tufts University, Yale, Notre Dame, Spring 2010
22. “*Clotho and Eugene: Tools and Languages to Create a Platform-Based Design Strategy for Synthetic Biology*”
Joint BioEnergy Institute, October 2009
23. “*What Do Embedded Electronics and Synthetic Biology Have In Common?*”
Siemens Technology-to-Business Center (TTB), July 2009
24. “*The Application of Platform-Based Design to Embedded Electronics and Synthetic Biological Systems*”
Columbia University, University of Washington, University of California (San Diego and LA), Spring 2009
25. “*Computer Aided Design of Synthetic Biological Systems Using Standardized Parts*”
Center for Hybrid and Embedded Software Systems (CHESS) Seminar, November 2008
26. “*Computer-Aided Design*” (Roundtable Leader)
Synthetic Biology 4.0, October 2008
27. “*The Platform-Based Design Methodology: Its application to embedded system design and synthetic biology*”
Columbia University, March 2008
28. “*Programmable Architecture Modeling in Metropolis*”
Cisco Systems, December 2007
29. “*A Design Flow for the Development, Characterization, and Refinement of System Level Architectural Services*”
Center for Hybrid and Embedded Software Systems (CHESS) Seminar, May 2007
30. “*Architecture Modeling and Refinement Verification in Metropolis*”
Center for Hybrid and Embedded Software Systems (CHESS) Seminar, May 2005
31. “*Metropolis: Overview and Architecture Modeling Proposal*”
Xilinx Research Labs, April 2004

Outreach Activities

Mentoring/Volunteer Work

1. *Boston University Research Internship in Science and Engineering (RISE)* mentor - 2012
2. *Empowering Leadership Alliance* mentor - 2009 to Present
3. *Summer Mathematics And Science Honors (SMASH) Academy* mentor - 2007 and 2008
4. *McNair Scholar* mentor - 2006
5. *Summer Undergraduate Program in Engineering Research at Berkeley (SUPERB)* program mentor - 2003, 2008, 2009
6. Participant in the *Chancellor’s Senior Advisory Group on Diversity and Inclusion (SAGDI)* at UC Berkeley
7. Head organizer for *Cal Day Science Fair* - UC Berkeley, 2002 to 2006

Invited Talks/Panels

1. *“From Computing To Biology and Back Again”*
New England Undergraduate Computing Symposium (NEUCS), Boston University, 2014
2. *“Applying to Graduate School: Nuts and Bolts of the Graduate Application Process”*
GEM GRAD Lab, Broad Institute, 2011, 2012, 2013
3. *“Graduate School Experience Top Ten Tips”*
Berkeley EDGE Conference keynote address, UC Berkeley, October 2009
4. *“Mirror, Mirror on the Wall...”*
Berkeley EDGE Conference keynote address, UC Berkeley, October 2008
5. *“How to Get a Post-doc Position”*
Graduate Women Engineers, UC Berkeley, October 2007
6. *“Strengthening Your Link in the Mentorship Chain”*
Berkeley Edge luncheon series, UC Berkeley, October 2007
7. *“Post Doc: To Be or Not to Be”*
GEM National Conference, Las Vegas Nevada, October 2007
8. *“Why Grad School”*
Berkeley EDGE Conference panel, UC Berkeley, Fall 2006

Workshops/Conferences

1. *Society for Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference*
San Jose California, October 2011
2. *Richard Tapia Celebration of Diversity in Computing Conference*
San Francisco, California, April 2011
3. *Academic Careers Workshops for Underrepresented Participants*
Los Angeles, California, February 2011
4. *Richard Tapia Celebration of Diversity in Computing Conference*
Portland, Oregon, April 2009
5. *Coalition to Diversify Computing (CDC) Academic Workshop for Underrepresented Participants*
University of Texas A&M, December 2007
6. *Georgia Tech FOCUS Fellows*
Atlanta, Georgia, January 2006
7. *The Compact for Faculty Diversity, Institute on Teaching and Mentoring*
Arlington, Virginia, October 2005
8. *National Society of Black Engineers (NSBE) Fall Regional Conferences*
Detroit, Michigan (2002) and Sacramento, California (2004)

Memberships

Professional: IEEE, IEEE Computer Society, ACM, ACM SIGDA, Eta Kappa Nu (HKN), National Society of Black Engineers (NSBE), Institute of Biological Engineering (IBE), Synthetic Biology Engineering Research Center (SynBERC), Synthetic Biology Open Language (SBOL) Developer, Hariri Institute for Computing and Computational Science and Engineering