

# Hao Zheng (Hank Jayne)

## Contact Information

Department of Computer Science and Engineering  
University of South Florida  
4202 East Fowler Ave., ENB118  
Tampa, FL 33620

+1-813-974-4757 (phone)  
+1-813-974-5456 (fax)  
zheng@cse.usf.edu  
www.cse.usf.edu/~zheng

## Education

**M.S. and Ph.D. in Electrical Engineering** 1996 – 2001  
University of Utah, Salt Lake City, UT

**B.S. in Electrical Engineering** 1989 – 1993  
Northwestern Polytechnic University, Xi'an, China

## Professional Experience

**Associate Professor**, the Department of Computer Science and Engineering 2010– present  
University of South Florida, Tampa, FL

**Assistant Professor**, the Department of Computer Science and Engineering 2004– 2010  
University of South Florida, Tampa, FL

**Research Scientist**, ASIC Design Group 2001 – 2004  
IBM Microelectronics Division, Burlington, VT

**Research Assistant**, the Department of Electrical and Computer Engineering 1996 – 2001  
University of Utah, Salt Lake City, UT

**Electronics Engineer**, Air China 1993 – 1996  
Beijing, China

## Research Interests

- System modeling, specification, and analysis
- Formal verification of discrete and continuous systems
- Methods and algorithms for parallel computing

## Awards and Honors

- USF Graduate School Recognition for Excellence in Mentorship at Master's level for Ryan Mabry, 2007 Outstanding Thesis Award recipient.
- USF Outstanding Research Achievement Award, 2007.
- NSF Faculty Early Career Development (CAREER) Award, 2006.

## Research Funding

- H. Zheng (PI), REU supplement grant, **National Science Foundation**, 8/2010 – 7/2011, \$12,000.
- H. Zheng (Lead PI), C. Myers (PI), “CPS:Small:Collaborative Research: Methods and Tools for the Verification of Cyber-Physical Systems”, **National Science Foundation**, 9/2009 – 8/2012, \$530,000.
- H. Zheng, “CAREER: Methodologies and Tools for Large Scale Real-Time Concurrent System Verification”, **National Science Foundation** CCF-0546492, 3/06 – 2/2011, \$400,000.
- S. Bhanja (PI), V. Jain (co-PI), N. Ranganathan (co-PI), S. Katkooori (co-PI), H. Zheng (co-PI), “CRI: Infrastructure acquisition for sub-100 nano VLSI research”, **National Science Foundation** CNS-0551621, 3/2006 – 2/2007, \$215,023,

## Publications

### Refereed Journal Articles

- H. Yao, H. Zheng, C. Myers, *Verification of Large Asynchronous Designs using Efficient State Space Reductions*, IEEE Transactions on Computers, forthcoming.
- H. Zheng, H. Yao, T. Yoneda, *Modular Model Checking of Large Asynchronous Designs with Efficient Abstraction Refinement*, IEEE Transactions on Computers, 59(4), 561-573, April, 2010.
- H. Zheng, *Compositional Reachability Analysis for Efficient Modular Verification of Asynchronous Designs*, IEEE Transactions on Computer-Aided Design of Integrate Circuits and Systems, 29(3), 329-340, March, 2010.
- H. Yao, H. Zheng, *Automated Interface Refinement for Compositional Verification*, in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 28(3), 433-446, 2009.
- H. Zheng, J. Ahrens, T. Xia, *A Compositional Method with Failure-Preserving Abstractions for Asynchronous Design Verification*, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 27(7), 2008.
- T. Xia, H. Zheng, *Timing Jitter Characterization for Mixed-Signal Production Test Using the Interpolation Algorithm*, IEEE Transactions on Industrial Electronics, 54(2), 2007.
- H. Zheng, C. Myers, D. Walter, S. Little, and T. Yoneda, *Verification of Timed Circuits with Failure Directed Abstractions*, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 25(3), 2006.
- H. Zheng, E. Mercer, C. Myers, *Modular Verification of Timed Systems Using Automatic Abstraction*, *IEEE Transactions on CAD*, September, 2003.

### Refereed Conference/Workshop Papers

- H. Yao, H. Zheng, C. Myers, *State Space Reductions for Scalable Verification of Asynchronous Designs*, IEEE International High Level Design Validation and Test Workshop (HLDVT), 2010.
- N. Donataccio, H. Zheng, *An Improvement in Decomposed Reachability Analysis for Symbolic Model Checking*, IEEE International High Level Design Validation and Test Workshop (HLDVT), 2010.
- R. Thacker, K. Johns, C. Myers, H. Zheng, *Automatic Abstraction for Verification of Cyber-Physical Systems*, International Conference on Cyber-Physical Systems, July, 2010.

- H. Zheng, “A Coordinated Reachability Analysis Method for Modular Verification of Asynchronous Designs”, accepted by IEEE International High Level Design Validation and Test Workshop, November, 2009.
- H. Zheng, H. Yao, T. Yoneda, “Synchronization-Based Abstraction Refinement for Modular Verification of Asynchronous Designs”, IEEE Computer Society Annual Symposium on VLSI, May, 2009.
- D. Mu, T. Xia, H. Zheng, “Data Dependent Jitter Characterization Based on Fourier Analysis”, Proceedings of IEEE International Symposium of Defect and Fault Tolerance in VLSI Systems (DFT), November 2006.
- T. Xia, H. Zheng, and A. Ginawi, “Self-Refereed On-Chip Jitter Measurement Circuit Using Vernier Oscillators”, IEEE Computer Society Annual Symposium on VLSI, May 2005.
- T. Xia, P. Song, H. Zheng, “Characterizing the VCO jitters due to the Digital Simultaneous Switching Noise”, ACM Great Lakes Symposium on VLSI, April 2005.
- H. Zheng, C. Myers, T. Yoneda, “Verification of Timed Circuits with Failure Directed Abstractions”, IEEE International Conference on Computer Design (ICCD’03), San Jose, CA, October 2003.
- E. Mercer, C. Myers, T. Yoneda, H. Zheng, “Modular Synthesis of Timed Circuits using Partial Order Reduction on LPN”, The Workshop on Theory and Practice of Timed Systems, April 2002.
- H. Zheng, E. Mercer, C. Myers, “Automatic Abstraction for Hierarchical Verification of Timed Systems”, International Conference on Computer Aided Verification (CAV’01), pages 182 – 193, July 2001.
- C. Myers, W. Belluomini, K. Killpack, E. Mercer, E. Peskin, H. Zheng, “Timed Circuits: A New Paradigm for High-Speed Design”, Asia and South Pacific Design Automation Conference, February 2001 (invited paper)
- H. Zheng, C. Myers, “Automatic Abstraction for Synthesis and Verification of Deterministic Timed Systems”, ACM/IEEE International Workshop on Timing Issues in the Specification and Synthesis of Digital Systems, December 2000.
- B. Bachman, H. Zheng, C. Myers, “Architectural Synthesis of Timed Asynchronous Systems”, IEEE International Conference on Computer Design (ICCD’99), October 1999.
- C. Myers, H. Zheng, “An Asynchronous Implementation of the MAXLIST Algorithm”, International Conference on Acoustics, Speech, and Signal Processing, April 1997.

#### **Ph.D. Dissertation**

- Modular Synthesis and Verification of Timed Circuits Using Automatic Abstraction, University of Utah, 2001.

## Teaching

University of South Florida (2004 - present)

- CDA 3103, Computer Organization, Fall 2011
- CDA 5416, Computer Logic Design, Fall 2010
- CDA 5416, Introduction to Computer-Aided Verification, Fall 2009
- CIS 4930, Design Automation, Spring, 2009
- CDA 4253, FPGA System Design, Fall 2006, 2008, Spring 2010, 2011.
- CDA 5416/CIS 4930, Introduction to Computer-Aided Verification, Spring, 2008, 2011
- COT 3100, Introduction to Discrete Structures, Fall, 2007, 2011.
- CIS 4930/CIS 6930, Introduction to Computer-Aided Verification, Spring, 2006, 2007.
- CIS 4930, FPGA Design, Fall, 2004, 2005.
- CIS 6930, Asynchronous Circuit Design, Spring, 2005

## Students Advised

Current Students:

- Haiqiong Yao (Ph.D.) 2006 - present
- Nicholas Donataccio (Ph.D.) 2008 - present
- Yangwei Cai (Ph.D) 2010 - present
- Yingying Zhang (Ph.D) 2010 - present
- Emmanuel Rodriguez (M.S.) 2010 - present
- Larry Moore (M.S.) 2010 - present

Former Graduate Students:

- Ryan Mabry (M.S., co-advised with Dr. Nagarajan Ranganathan) 2007  
**Recipient of 2007 USF Outstanding Thesis Award**
- Jared Ahrens (M.S.) 2007

Former undergraduate Research Students

- **REU Students**
  - Michael Kubacki 2011
  - Emmanuel Rodriguez and Larry Moore 2010
  - Francesco DiNatale and Giuseppe DiNatale 2009
  - Christopher Earl 2007
  - Halam Le 2007
  - Paul Ireif 2006
- **Honors Theses**
  - Christopher Cohoon, 2010
  - Ryan Marby, 2005

## Invited Talks

- Intel Corporation, 8/2010
- University of Southern California, Los Angeles, 8/2009
- University of British Columbia, Vancouver, Canada, 6/2009
- Brown University, Providence, RI, 3/2009
- NEC Labs America, Princeton, NJ, 2/2009
- IBM Austin Research Lab, Austin, TX, 2/2009
- University of Florida, Gainesville, FL, 11/2008
- Portland State University, Portland, OR, 11/2008
- University of Utah, Salt Lake City, UT, 8/2007
- Xidian University, Xi'an, PRC, 5/2006

## Services

IEEE senior member

### Program Committees:

- HLDVT 2010, IEEE International High Level Design Validation and Test Workshop (Finance Chair).
- HLDVT 2009, IEEE International High Level Design Validation and Test Workshop.
- ISVLSI 2009, IEEE Computer Society Annual Symposium on VLSI (session chair).

### Reviewer for:

- National Science Foundation, panelist, 2006.
- A proposal from Netherlands Organization for Scientific Research, division Physical Sciences
- **Journals:**
  - ACM Transactions on Embedded Computing Systems
  - Formal Methods in System Design
  - IEEE Transactions on Computers
  - IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems
  - IEEE Transactions on Very Large Scale Integration Systems
  - ACM Transactions on Design Automation of Electronic Systems
  - IEE Proceedings of Computers and Digital Techniques
  - Transitions on Information Processing Society of Japan
  - Journal of Zhejiang University - Science A
  - Louisiana Board of Regents RCS proposal
- **Conferences:**
  - 2009 : ISVLSI.
  - 2008 : DATE.
  - 2006 : ISCAS and DAC.
  - 2005 : DAC and GLVLSI.

### Services to the University

- Faculty judge for USF Undergraduate Research Symposium, April, 2009.
- Reviewer for USF College of Engineering CAREER reviewing panel Summer 2008
- Faculty advisor of the IEEE Computer Society USF Chapter 2006– present  
Won **Best Student Organization of College of Engineering** award (2009) .
- Member of the Undergraduate Committee, CSE Dept., USF 2004– present