Michael P McKeown

mmckeown@princeton.edu

EDUCATION

Princeton University   Princeton, NJ
Doctor of Philosophy, Department of Electrical Engineering
  ▪ Expected Graduation Date: June 2018
Master of Arts, Department of Electrical Engineering
  • Graduation Date: June 2014

University of California, Santa Barbara   Santa Barbara, CA
Bachelor of Science, Computer Engineering GPA: 3.89
  ▪ Graduation Date: June 2012

EXPERIENCE

NVIDIA Corporation   Austin, TX
Research Intern   May 2016 – Aug 2016
  ▪ Created and evaluated methods to reduce warp divergence in applications with nested loop trip count divergence
  ▪ Worked with cutting edge GPU hardware and proposed enhancements for future architectures

Princeton Graduate Research Project   Professor David Wentzlaff
Piton Microprocessor   January 2014 – Present
  ▪ 25 core processor implemented in IBM 32nm SOI
  ▪ Responsible for OpenSPARC T1 core integration and modifications, implementation of Execution Drafting, back-end synthesis and place and route flow, and timing, DRC and LVS sign-off
  ▪ Led design and layout implementation of a 14-layer printed circuit board for testing Piton
  ▪ Chips received and tested working in the lab
  ▪ Open sourced all chip materials as OpenPiton, a framework for manycore research

Princeton Graduate Research Project   Professor David Wentzlaff
Execution Drafting   January 2013 – Present
  ▪ Devised and evaluated a microarchitectural technique for improving energy efficiency in data center servers by taking advantage of commonality in data center applications

TrueVision Systems   Goleta, CA
Software Engineer Intern   June 2011 – December 2011 & June 2012 – August 2012
  ▪ Built software support for gesture interface using Microsoft Kinect and Panasonic D-Imager devices
  ▪ Integrated medical style foot pedal into new application platform for hands-free navigation of GUI
  ▪ Collaborated with software engineering team to create new application platform for 3D medical visualization applications tailored for various vertical niche markets

University of California, Santa Barbara Undergraduate Research Project   Professor Li-C. Wang
Chip Burn-In Reduction   November – May 2012
  ▪ Evaluated machine learning algorithms for reducing chip burn-in time by predicting which chips would fail at later burn-in stages using data from earlier stages

University of California, Santa Barbara Undergraduate Research Project   Professor Behrooz Parhami
Arithmetic with Binary-Encoded Balanced Ternary Numbers   March – August 2011
  ▪ Conducted research on potential benefits of a radix 3 number system using digit set {-1,0,1} in performing arithmetic operations in digital circuits

University of California, Santa Barbara Orientation Programs   Santa Barbara, CA
Orientation Staff Member   March - August 2009 & March - August 2010
  ▪ Advised 600+ students and parents on university- related issues
  ▪ Facilitated community awareness workshops and represented university on student panels
  ▪ Guided 30+ campus and community tours and facilitated academic advising sessions
  ▪ Collaborated closely with 27 member peer team to improve quality and function of program

California Institute of Technology   Pasadena, CA
Lab Assistant   Summer 2007 & Summer 2008
  ▪ Helped install and troubleshoot cosmic ray detector sites in surrounding high schools
  ▪ Assisted high school students from around the area in weekly summer program
  ▪ Created and coordinated daily scientific workshops involving cosmic rays and detectors for summer program

TEACHING EXPERIENCE
Princeton ELE475 – Computer Architecture Assistant Instructor   Spring 2014
  ▪ Conducted a tutorial on the Verilog hardware description language, held regular office hours, graded labs and exams, and held review sessions for exams
Completed Princeton Assistant Instructor Orientation   January 2014
Coursera.org Computer Architecture Teaching Assistant   Fall 2013 & Fall 2014
  ▪ Managed course materials and exams and answered questions on discussion forum

AWARDS AND HONORS
ISCA 2016 Student Travel Grant   June 2016
ASPLOS 2016 Student Travel Grant   April 2016
Yan Huo *94 Graduate Fellowship   Academic Year 2015-2016
ISCA 2015 Student Travel Grant   June 2015
IEEE TC-ARCH MICRO-47 Student Travel Grant   January 2015
Princeton Department of Electrical Engineering Travel Grant   October 2014
National Science Foundation Graduate Research Fellowships Program Honorable Mention   March 2014
University of California, Santa Barbara Dean's Honors Recipient   Academic Years 2008-2012

PUBLICATIONS
Michael McKeown, Yaosheng Fu, Tri Nguyen, Yanqi Zhou, Jonathan Balkind, Alexey Lavrov, Mohammad Shahrad, Samuel Payne, and David Wentzlaff, "Piton: A Manycore Processor for Multitenant Clouds," *IEEE Micro*, March/April 2017

Michael McKeown, Yaosheng Fu, Tri Nguyen, Yanqi Zhou, Jonathan Balkind, Alexey Lavrov, Mohammad Shahrad, Samuel Payne and David Wentzlaff, "Piton: A 25-core Academic Manycore Processor," *HotChips 28*, Cupertino, CA, 23 August 2016.

Sebastien Philippe, Moritz Kütt, Michael McKeown, Ulrich Rührmair, and Alexander Glaser, "The Application of Virtual Proofs of Reality to Nuclear Safeguards and Arms Control Verifications," *57th Annual INMM Meeting*, Atlanta GA, 24 July 2016.

Jonathan Balkind, Michael McKeown, Yaosheng Fu, Tri Nguyen, Yanqi Zhou, Alexey Lavrov, Mohammad Shahrad, Adi Fuchs, Samuel Payne, Xiaohua Liang, Matthew Matl, and David Wentzlaff, "OpenPiton: An Open Source Manycore Research Framework," *Proc. 21st International Conference on Architectural Support for Programming Languages and Operating System*, Atlanta, GA, 2 April 2016.

David Wentzlaff, Michael McKeown, Yaosheng Fu, Tri Nguyen, Yanqi Zhou, Jonathan Balkind, Alexey Lavrov, Mohammad Shahrad, and Samuel Payne, "Designing a Complex 25-Core Academic Processor," *Architectural Research Prototyping (WARP)*, 2015 6th Workshop on, Portland, OR, 14 June 2015.

Michael McKeown, Jonathan Balkind, and David Wentzlaff, "Execution Drafting: Energy Efficiency Through Computation Deduplication," *Proc. 47th International Symposium on Microarchitecture*, Cambridge, UK, 13-17 December 2014.

Behrooz Parhami and Michael McKeown, "Arithmetic with Binary-Encoded Balanced Ternary Numbers," *Proc. 47th Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, CA, 3-6 November 2013.

OTHER ACTIVITIES
Jonathan Balkind, Michael McKeown, Alexey Lavrov, David Wentzlaff, "An Introduction to OpenPiton, a Manycore Open Source Processor", *Half-day tutorial held in conjunction with HPCA 2017*, Austin, TX, 5 February 2017.

Jonathan Balkind, Michael McKeown, David Wentzlaff, "An Introduction to OpenPiton, a Manycore Open Source Processor," *Half-day tutorial held in conjunction with ISCA 2016*, Seoul, Korea, 19 June 2016.