Matthew Spencer

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INTERESTS

MEMS circuits, devices, simulation and modeling. Digital and mixed-signal circuit design.

EDUCATION

University of California, Berkeley, Berkeley, CA

Pursuing Doctorate in Electrical Engineering – GPA: 3.88/4.0   **Aug 2008 – present**
- Expected graduation date: May 2014
- Advisor: Professor Elad Alon

Massachusetts Institute of Technology, Cambridge, MA

Master of Electrical Engineering – GPA: 4.8/5.0   **Jun 2007 – Jun 2008**
Bachelor of Electrical Engineering – GPA: 4.7/5.0   **Sep 2003 – Jun 2007**
Minor in Materials Science and Engineering

Teaching Experience:
- UC Berkeley, GSI for EE141: Led discussions and laboratories on digital circuit design.
- UC Berkeley, Lab GSI for EE142: Instructed students on design, construction and measurement (network an., spectrum an.) of filters, amplifiers and mixers operating at hundreds of MHz.
- MIT, Lab Assistant for 6.115: Helped students implement microcontroller systems including synthesizers, display drivers and controls for lamp ballasts, motor drivers and switching converters.

EXPERIENCE

University of California Berkeley, Berkeley, CA   **Aug 2008 – present**
- Designed digital circuits using micromechanical devices while developing new architectures to take advantage of the low device leakage and minimize the effect of long device delay.
- Taped out and tested ten chips containing custom MEM relay-based circuits and VLSI systems.
- Developed mixed-physics simulator model of the micromechanical relay to expedite circuit design. Integrated simulation model with standard CAD tools: Cadence, Calibre and Spectre.

Texas Instruments DLP, Plano, TX   **May 2012 – Aug 2012**
- Wrote circuit-level simulation models for emerging MEMS devices.
- Developed software to assist in characterization and data processing for the new devices.
- Helped guide testing and fabrication of MEMS device.

Intel Components Research, Portland, OR   **May 2011 – Aug 2011**
- Wrote models and simulation scripts for emerging devices which combined atomistic simulation results with industrial tool flow.
- Used models to compare emerging technology against CMOS at digital system level.

MIT Research Laboratory for Electronics, Cambridge, MA   **Sep 2006 – Jun 2008**
- Designed transimpedance amplifier for measuring electrically active optoelectronic fibers.
- Helped use fiber interface circuits to take large scale field measuremnts for lensless camera.
- Explored chemical process to connect fibers electrodes to printed circuit boards.

Analog Devices, Wilmington, MA   **Jun 2006 – Sep 2006**
- Designed hardware, firmware and software for USB-to-I^2C interface used in circuit eval. boards.
- Worked on system for rapid characterization of early spins of HDMI multiplexers.

SELECTED PUBLICATIONS

- Matthew Spencer, Fred Chen, Cheng C. Wang, Rhesa Nathanael, Hossein Fariborzi, Abhinav Gupta, Hei Kam, vincent Pott, Jaeseok Jeon, Tsu-Jae King Liu, Dejan Markovic, Elad Alon, Vladimir Stojanovic, *Demonstration of Integrated Micro-Electro-Mechanical Relay Circuits for VLSI Application.* IEEE Journal of Solid State Circuits, Vol. 46, Iss. 1, Jan. 2011.
- Hossein Fariborzi, Matthew Spencer, Vaibhav Karkare, Jaeseok Jeon, Rhesa Nathanael, Chengcheng Wang, Fred Chen, hei Kam, Vincent Pott, Tsu-Jae King liu, Elad Alon, Vladimir Stojanovic, Dejan Markovic, *Analysis and Demonstration of MEM-Relay Power Gating.* Custom Integrated Circuits Conference, 2010.

AWARDS

Demetri Angelakos Award for Altruism, UC Berkeley EECS, 2013
Intel Fellowship, Intel, 2012
Jack Raper Outstanding Technical Directions Paper Award, ISSCC 2011
UC Berkeley Outstanding Graduate Student Instructor for 2011
EECS Outstanding Graduate Student Instructor for 2011