

Name

Address
Phone
Email

Current Position

University of Illinois – Beckman Institute **2011-present**
Postdoctoral Fellowship

Education

University of Pennsylvania **May 2010**
Ph.D., Bioengineering
Thesis: “Bio-interfaced Silicon Electronics for Neural and Cardiac Applications”
Developed a new class of implantable, flexible medical devices, requiring design of unique circuits, fabrication techniques, and software algorithms.
Coursework: Machine Learning, Cellular Biology, Neuroscience Core Curriculum, Structural Neurobiology, Analog Integrated Circuits, Special Topics in Computational Neuroscience

Princeton University **June 2004**
M.Eng, Electrical Engineering **GPA: 3.88**
Coursework: Computer Architecture, Embedded Computing, Photonics and Light Wave Communications, Pervasive Information Systems, Technology and Application of Nanostructures

Princeton University **June 2003**
B.S.E., Electrical Engineering *cum laude* **Departmental GPA: 3.76**
Coursework: Analog Electronics, Mobile Computing, Solid State Devices, Automatic Control Systems, System Design and Analysis, Microprocessors for Measurement/Control

Industry Experience

Qualcomm, Inc. *Consultant*
Bridgewater, NJ **Sep. 2006 – Sep. 2009**
▪ Continued support of all mobile software release process and development

Flarion Technologies, Inc. (acquired by Qualcomm) *Architecture and Algorithms Engineer*
Bedminster, NJ **July 2004 – Sep. 2006**
▪ Performed next-generation application specific integrated circuit design and verification
▪ Managed all mobile software releases including compilation, packaging and archival
▪ Created a software GPS data acquisition system utilizing existing mobile hardware for E911
▪ Implemented a new packet header compression algorithm to improve Voice over IP performance
▪ Created a Subscriber Identity Module (SIM) interface to improve network security and user mobility

Princeton Technology Advisors Corp. *Embedded Circuit Designer*
Princeton, NJ **June 2003 – Sep. 2003**
▪ Design of extremely low-noise analog data acquisition system that occupies less than 1 sq. inch
▪ Development of DSP-based system for data acquisition and processing and laser power supply
▪ Created custom pulse oximeter for correlation of heartbeat with glucose concentration measurement

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Lutron Electronics Company, Inc.

Coopersburg, PA

Embedded Software Development Engineer

May 2002 – Aug. 2002

- Created software and procedures to allow wireless field upgrades of embedded device code
- Authored flash writing routines, download protocol and front-end to drive upgrade process
- Developed media bridge to assist wireless development and facilitate home network integration

Entrepreneurship

MC10 Inc.

www.mc10inc.com

Consultant

Apr. 2009 – Present

- Consulting and co-developing a series of cardiac and neuro-devices with start-up that has licensed patents from my thesis research.

N2MB Racing, LLC

www.n2mb.com

Founder and Owner

Mar. 2006 – Present

- Founded N2MB Racing, LLC, a successful startup company with over 200k annual revenue specializing in creating innovative automotive electronic products for performance applications.

Publications

Name, D.-H. Kim, J. D. Moss, Y.-S. Kim, J. A. Blanco, N. Annetta, A. Hicks, J. Xiao, Y. Huang, D. J. Callans, J. A. Rogers, B. Litt, A conformal, bio-interfaced class of silicon electronics for mapping cardiac electrophysiology. *Sci. Transl. Med.* **2**, 24ra22 (2010).

D.-H. Kim, **Name**, J. Amsden, J. Xiao, L. Vigeland, Y.-S. Kim, J. Blanco, B. Panilaitis, E. Frechette, D. Contreras, D. Kaplan, F. Omenetto, Y. Huang, K.-C. Hwang, M. Zakin, B. Litt, J. Rogers, Dissolvable films of silk fibroin for ultrathin conformal bio-integrated electronics. *Nature Materials* (2010) Apr 18.

Kristina Alemany, Kristen Bethke, Niraj Bhatt, Brent Bollman, **Name**, Daniel Nosenchuck, Stephen Lyon, Michael Littman; "Integrated Robotic Team for Martian Water Collection," RASC-AL (Revolutionary Aerospace Systems Concepts-Academic Linkage): 2002 Advanced Concept Design Presentation, p. 78-93 and RASC-AL 2003 Forum

Teaching Experience

Lecturer for BE 225, "Technology & Engineering in Medicine," *University of Pennsylvania*

Spring 2010

Lecturer for BE 521, "Brain – Computer Interfaces," *University of Pennsylvania*

Spring 2009, 2010

- Authored and delivered lecture material
- Developed and evaluated homework assignments

Course Design Manager for ELE 302, "System Design and Analysis," *Princeton University*

Spring 2004

- Designed circuits for laboratory projects, rewrote documentation and authored lecture material

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- Provided instruction in the laboratory and trained teaching assistants

Assistant in Instruction for ELE 222, “Earth (Silicon), Wind (Wireless), and Fire (Fiber-optics): Technologies for the Non-Technologist” (electrical engineering overview course),
Princeton University

Fall 2003

- Created laboratory experiments to supplement the course
- Provided laboratory instruction and guidance with homework exercises
- Taught analog circuits, digital logic, computer architecture, wireless communication, signal processing and semiconductor design and fabrication

Awards

- 2010 Beckman Institute Postdoctoral Fellowship
- 2010 Solomon R. Pollack Award for best Ph.D. Thesis Research, Department of Bioengineering, University of Pennsylvania
- 2009 Nano/Bio Interface Center Graduate Research Award for the best graduate research at the University of Pennsylvania on Nanotechnology applied to Biology
- National Finalist in NASA-sponsored design competition, RASC-AL 2003
- Two Outstanding Teaching Assistant Awards from Princeton Electrical Engineering department

Patents

- Patent – “FLEXIBLE AND SCALABLE SENSOR ARRAYS FOR RECORDING AND MODULATING PHYSIOLOGIC ACTIVITY,” (International Publication Number: WO 2009/114689 A1, published 17 September, 2009)
- Provisional Patent - “SELF-ADAPTIVE BIO-SIGNAL SENSING AND MODULATION DEVICE.”
- Provisional Patent - “SYSTEM FOR BIOLOGICAL SENSING AND STIMULATING APPLICATIONS USING HIGH-DENSITY ARRAY DEVICE”
- Provisional Patent – “Protheses for Audition Using Flexible, Active Electronic Arrays”

Prior Research Experience

- Investigated new techniques for high-efficiency, gigahertz range switching power amplifiers
 - Research project at Flarion Technologies advised by Dr. Rajiv Laroia, Founder and CTO
- Development of optical laser spectroscopy system for non-invasive blood glucose monitoring
 - Masters project advised by Prof. Stephen Lyon and in collaboration with startup Princeton Technology Advisors Corp.
- Characterization of modulation performance in a silicon *pn* diode with efficient electroluminescence
 - Experimental research on a sample provided by Dr. Manfred Helm of the Institute of Ion Beam Physics and Materials Research, Dresden, Germany
- Simple Power Analysis (SPA) of Embedded DES Encryption using Neural Networks
 - Year-long research project advised by Prof. Wayne Wolf
- Team leader for research project developing teams of autonomous robots for Martian sub-surface water collection
 - Results presented to NASA at RASC-AL 2003 forum

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Journal Covers



Science Translational Medicine, March 24, 2010



Nature Materials, June, 2010

Media Coverage

- 05/06/10 – [The Economist](#), “[Silky circuits](#)”
- 05/06/10 – [Nanotechweb](#), “[Silk helps make bio-integrated electronics](#)”
- 04/26/10 – [Chemical and Engineering News](#), “[Silken Electronics](#)”
- 04/22/10 – [Slashdot](#), “[Ultrathin Silk-Based Brain Implants](#)”
- 04/20/10 – [CNET News](#), “[Ultrathin silk-based electrodes as brain implants](#)”
- 04/19/10 – [Popular Science](#), “[Silicon Shrinkwrap Melts Smoothly Onto Cat Brain to Monitor Activity in Real Time](#)”
- 04/19/10 – [Engadget](#), “[Scientists develop implants that melt onto the surface of the brain](#)”
- 04/19/10 – [Wired Magazine](#), “[Ultrathin Silk-Based Electronics Make Better Brain Implants](#)”
- 04/19/10 – [Yahoo News](#), “[Silk brain implant could aid spinal injuries, epilepsy](#)”
- 04/19/10 – [R&D Magazine](#), “[It’s not your brain melting, it’s your brain implant](#)”
- 04/18/10 – [NIH News](#), “[A Brain-Recording Device that Melts into Place](#)”
- 04/18/10 – [Reuters](#), “[Silk brain implant could aid spinal injuries, epilepsy](#)”
- 03/26/10 – [ModernMedicine](#), “[Device Maps Electrical Activity of Beating Heart](#)”
- 03/26/10 – [Nanotechnology Now](#), “[Flexible electronics could help put off-beat hearts back on rhythm](#)”
- 03/25/10 – [CNET News](#), “[Giving arrhythmic hearts a hug](#)”

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03/24/10 – [BusinessWeek, “New Sensors Stick to Organs to Monitor Health”](#)

03/24/10 – [UPI, “Flexible silicon medical device created”](#)



01/26/10 - [New Electronics Magazine – Cover Article, “Silicon gets silky”](#)

11/20/09 – [Wired Magazine, “The Illustrated Man: How LED Tattoos Could Make Your Skin a Screen”](#)

11/03/09 – [MIT Technology Review, “Implantable Silicon-Silk Electronics”](#)