

# Bor-rong Chen

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## Objective

Research scientist or advanced engineering positions

## Education

**Harvard University (2004-2009)** **Cambridge, MA**

Ph.D. in Computer Science. Thesis advisor: Dr. Matt Welsh. Thesis title: "Systems Challenges for Medical Sensor Networks." Expected degree date: November, 2009

**Tufts University (2002-2004)** **Medford, MA**

Master of Science in Computer Engineering, May 2004. Thesis advisor: Dr. Hwa Chang. Thesis title: "Design for Low Power Ad-hoc Wireless Networks"

**National Taiwan University (1996-2000)** **Taipei, Taiwan**

Bachelor of Science in Electrical Engineering, June 2000

## Research areas

Sensor networks, distributed computing, operating systems and wireless communication

## Technical skills

Processor architectures: x86, MIPS, TI MSP430, ARM

Programming languages: C/C++, nesC, Python, Java, Matlab

Operating systems: GNU/Linux, Windows, TinyOS

Industry standards: TCP/IP, IEEE 802.11, IEEE 802.15.4

## Research experience

**Harvard University** **Cambridge, MA**

[July 2004 – September 2009] Research Assistant under Dr. Matt Welsh. Undertaken research projects: Mercury: sensor network for motion analysis; Pixie: operating system support for resource aware sensor network programming; LiveNet: passive monitoring of sensor networks; CodeBlue medical sensor network architecture; TinyADMR: ad-hoc multicast routing for sensor networks and PowerTOSSIM: power simulation for TinyOS.

**Nokia Research Center Cambridge** **Cambridge, MA**

[June 2007 – September 2007] Research Intern. Building a research prototype for sensor data streaming over multiple wireless networking technologies: Bluetooth, 802.11 and 802.15.4.

**HP Cambridge Research Laboratory** **Cambridge, MA**

[June 2005 – September 2005] Research Intern. Implementation of a fast hand-off scheme for low duty-cycle IEEE 802.15.4 networks for in-hospital patient monitoring.

**Tufts University** **Medford, MA**

[January 2003 – August 2003] Research Assistant. Investigate energy consumption of ad-hoc routing protocols with mobile nodes under different mobility patterns.

**National Taiwan University****Taipei, Taiwan**

[September 1999 – June 2000] Undergraduate researcher. Implementation of a beat-tracking algorithm to extract beat information from acoustic musical signals.

**National Taiwan University****Taipei, Taiwan**

[September 1998 – June 1999] Undergraduate researcher. Implementation of a de-interleaving algorithm to decouple mixed radar signals with different periods.

**Academia Sinica****Taipei, Taiwan**

[April 1998 – June 1999] Undergraduate researcher. Design and implementation of a web-based remote robot control system for commanding robot arms.

**Journal Publications**

“*The Advanced Health and Disaster Aid Network: A Light-weight Wireless Medical System for Triage*”, Tia Gao, Tammara Massey, Leo Selavo, David Crawford, Bor-rong Chen, Konrad Lorincz, Victor Shnayder, Logan Hauenstein, Foad Dabiri, James Jeng, Arjun Chanmugam, David White, Majid Sarrafzadeh, and Matt Welsh. *IEEE Transactions on Biomedical Circuits and Systems*, 2007.

**Conference Publications**

“*Mercury: A Wearable Sensor Network Platform for High-Fidelity Motion Analysis*”, Konrad Lorincz, Bor-rong Chen, Geoffrey Werner Challen, Atanu Roy Chowdhury, Shyamal Patel, Paolo Bonato, and Matt Welsh. In *Proceedings of the 7th ACM Conference on Embedded Networked Sensor Systems (SenSys'09)*, November 2009.

“*Resource Aware Programming in the Pixie OS*”, Konrad Lorincz, Bor-rong Chen, Jason Waterman, Geoff Werner-Allen, and Matt Welsh. In *Proceedings of the 6th ACM Conference on Embedded Networked Sensor Systems (SenSys'08)*, November 2008.

“*LiveNet: Using Passive Monitoring to Reconstruct Sensor Network Dynamics*”, Bor-rong Chen, Geoffrey Peterson, Geoff Mainland and Matt Welsh. in *Proceedings of the 4th IEEE/ACM International Conference on Distributed Computing in Sensor Systems (DCOSS'08)*, Santorini Island, Greece, June 2008.

“*Wireless Medical Sensor Networks in Emergency Response: Implementation and Pilot Results*”, Tia Gao, Christopher Pesto, Leo Selavo, Yin Chen, JeongGil Ko, JongHyun Lim, Andreas Terzis, Andrew Watt, James Jeng, Bor-rong Chen, Konrad Lorincz, and Matt Welsh. In *Proceedings of the IEEE International Conference on Technologies for Homeland Security*, Waltham, MA, May 2008.

“*Implementing minimized multivariate public-key cryptosystems on low-resource embedded systems*”, Bo-Yin Yang, Chen-Mou Cheng, Bor-Rong Chen and Jiun-Ming Chen. In *Proceedings of 3rd International Conference on Security in Pervasive Computing (SPC'06)*, York, UK, Apr. 2006

“*Simulating the Power Consumption of Large-Scale Sensor Network Applications*”, Victor Shnayder, Mark Hempstead, Bor-rong Chen, Geoff Werner-Allen, and Matt Welsh. *Proceedings of the Second ACM Conference on Embedded Networked Sensor Systems (SenSys'04)*, November 2004

## **Workshop Publications**

*“Pixie: An Operating System for Resource-Aware Programming of Embedded Sensors”*, Konrad Lorincz, Bor-rong Chen, Jason Waterman, Geoffrey Werner-Allen and Matt Welsh. In *Proceedings of the Fifth workshop on Embedded Networked Sensors (HotEmNets'08)*, Charlottesville, Virginia, June 2008.

*“Ad-Hoc Multicast Routing on Resource-Limited Sensor Nodes”*, Bor-rong Chen, Kiran-Kumar Muniswamy-Reddy and Matt Welsh. In *Proceedings of the Second ACM/Sigmobile workshop on Multi-hop Ad Hoc Networks: from theory to reality (REALMAN'06)*, Florence, Italy, May 2006.

## **Technical Reports**

*“LiveNet: Using Passive Monitoring to Reconstruct Sensor Network Dynamics”*, Bor-rong Chen, Geoffrey Peterson, Geoff Mainland and Matt Welsh. Harvard University Technical Report TR-11-07, August, 2007.

*“Lessons Learned from Implementing Ad-Hoc Multicast Routing in Sensor Networks”*, Bor-rong Chen, Kiran-Kumar Muniswamy-Reddy and Matt Welsh. Harvard University Technical Report TR-22-05, November, 2005.

*“Sensor Networks for Medical Care”*, Victor Shnayder, Bor-rong Chen, Konrad Lorincz, Thaddeus R. F. Fulford-Jones and Matt Welsh. Harvard University Technical Report TR-08-05, April 2005.