

## **Geoffrey Challen**

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### **Research Interests**

Energy management, computer systems, smart phones, embedded and distributed systems, sensor networks, resource management, sustainability.

### **Education**

- **Ph.D. in Computer Science**, Harvard University, May 2010  
Adviser: Matt Welsh. Thesis title: "Data Fidelity and Resource Management for Data-Rich Sensor Networks."
- **A.B with Honors in Physics**, Harvard University, June 2003

### **Experience**

- **Assistant Professor**, University at Buffalo, State University of New York, August 2011–
- **Post-Doctoral Assistant**, Massachusetts Institute of Technology, September 2010–June 2011  
Working with Hari Balakrishnan, studied ways to reduce 802.11 power consumption in the context of the AirBlue FPGA-based software-radio platform.
- **Research Assistant**, Harvard University, June 2003 - May 2010  
Working with Matt Welsh, designed sensor network systems supporting the scientific study of active volcanoes. Developed the Lance architecture for optimizing high-resolution signal collection. Participated in the design of the Pixie operating system and the Mercury architecture for medical monitoring. Designed and built the IDEA sensor network service enabling coordinated distributed energy management. Deployed and maintained MoteLab, a wireless sensor network testbed.

### **Publications**

- **The Case for Power-Agile Computing**  
Geoffrey Challen and Mark Hempstead. In *Proceedings of the 13th Workshop on Hot Topics in Operating Systems* (HotOS'11).
- **IDEA: Integrated Distributed Energy Awareness for Wireless Sensor Networks**  
Geoffrey Werner Challen, Jason Waterman and Matt Welsh. In *Proceedings of the 8th Annual International Conference on Mobile Systems, Applications and Services* (MobiSys'10).
- **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 Seventh ACM Conference on Embedded Networked Sensor Systems* (Sensys'09).
- **Peloton: Coordinated Resource Management for Sensor Networks**  
Jason Waterman, Geoffrey Werner Challen, and Matt Welsh. In *Proceedings of the 12th Workshop on Hot Topics in Operating Systems* (HotOS'09).
- **Lance: Optimizing High-Resolution Data Collection in Wireless Sensor Networks**  
Geoffrey Werner-Allen, Stephen Dawson-Haggerty and Matt Welsh. In *Proceedings of the Sixth ACM Conference on Embedded Networked Sensor Systems* (Sensys'08).

- **Resource-Aware Programming in the Pixie OS**  
Konrad Lorincz, Bor-rong Chen, Jason Waterman, Geoffrey Werner-Allen and Matt Welsh. In *Proceedings of the Sixth ACM Conference on Embedded Networked Sensor Systems* (Sensys'08).
- **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).
- **Fidelity and Yield in a Volcano Monitoring Sensor Network**  
Geoffrey Werner-Allen, Konrad Lorincz, Jeff Johnson, Jonathan Lees and Matt Welsh. In *Proceedings of the Seventh USENIX Symposium on Operating Systems Design and Implementation* (OSDI'06).
- **Deploying a Wireless Sensor Network on an Active Volcano**  
Geoffrey Werner-Allen, Konrad Lorincz, Mario Ruiz, Omar Marcillo, Jeff Johnson, Jonathan Lees and Matt Welsh. In *IEEE Internet Computing*, Special Issue on Data-Driven Applications in Sensor Networks, March/April 2006.
- **Firefly-Inspired Sensor Network Synchronicity with Realistic Radio Effects**  
Geoffrey Werner-Allen, Geetika Tewari, Ankit Patel, Radhika Nagpal and Matt Welsh. In *Proceedings of the Third ACM Conference on Embedded Networked Sensor Systems* (Sensys'05).
- **MoteLab: A Wireless Sensor Network Testbed**  
Geoffrey Werner-Allen, Pat Swieskowski, and Matt Welsh. In *Proceedings of the Fourth International Conference on Information Processing in Sensor Networks* (IPSN'05), Special Track on Platform Tools and Design Methods for Network Embedded Sensors (SPOTS).
- **Monitoring Volcanic Eruptions with a Wireless Sensor Network**  
Geoffrey Werner-Allen, Jeff Johnson, Mario Ruiz, Jonathan Lees, and Matt Welsh. In *Proceedings of the Second European Workshop on Wireless Sensor Networks* (EWSN'05).
- **Simulating the Power Consumption of Large-Scale Sensor Network Applications**  
Victor Shnayder, Mark Hempstead, Bor-rong Chen, Geoffrey Werner-Allen, and Matt Welsh. In *Proceedings of the Second ACM Conference on Embedded Networked Sensor Systems* (SenSys'04).

#### Books and Book Chapters

- **Wireless Sensor Networks: Deployments and Design Frameworks**  
Elena Gaura, Mike Allen, Lewis Girod, James Brusey, Geoffrey Werner Challen. Springer Publishing, 2010. Book co-editor and chapter co-author.

#### Professional Activities

- **Program Committee Member** for the Sixth IEEE International Workshop on Sensor Networks and Systems for Pervasive Computing (PerSeNS 2010); the 9th ACM Conference on Embedded Networked Sensor Systems (SenSys 2011); the 10th ACM Conference on Embedded Networked Sensor Systems (SenSys 2012).
- **External Reviewer** for IPSN'10, IPSN'08, EWSN'06, Sensys'05, and others.