James L. Andreson

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Research

Led the design and development of the Mica wireless sensor network hardware and software. This project was funded by DARPA as the foundation of its Network Embedded Systems Technology (NEST) research program. The Mica sensor platform combines communication and computation into a tiny package that can be both a sensor node and a router in a wireless sensor network. Over 3000 Mica nodes have been sold to date.

Personally architected and developed the TinyOS software platform. TinyOS is an operating system designed to uniquely meet the needs of wireless micro networks. Combining event based programming techniques and highly efficient modularity, TinyOS delivers the efficiency demanded by low power wireless sensor networks. Over 100 research organizations are now developing applications on TinyOS. MIT has recently selected this technology as one of the top ten technologies for the future.

Developed applications and algorithms for use in wireless sensor networks. These include multi-hop network routing and configuration algorithms, data aggregation algorithms, environmental monitoring applications, and vehicle detection and tracking applications.

Designed a custom chip using Cadence VHDL synthesis tools and prototyped in silicon an integrated CMOS wireless sensor node. Combined RF, computation, memory, and hardware accelerators onto a 4 mm^2 CMOS die. Running TinyOS, this design represents the future of wireless micro networks.

Education

Doctor of Philosophy - Electrical Engineering and Computer

2001 – 2003 University of California at Berkeley

- Graduated Spring 2003 with a PhD degree in Electrical Engineering and Computer Science.
- Dissertation topic: System Architecture for Wireless Sensor Networks
- Major: Operating Systems, Minor: Information Management and Computer Architecture
- Winner of the 2001 C.V. Ramamoorthy Distinguished Research Award
- Winner of the 2003 MIT Technology Review Top 100 Young Innovator Award

Masters of Science - Electrical Engineering and Computer Science

1999 - 2000 University of California at Berkeley

- Graduated December 2000 with a MS degree in Electrical Engineering and Computer Science. Overall GPA: 4.00.

- Masters topic: System Architecture for Wireless Sensor Networks

Bachelors of Science - Electrical Engineering and Computer Science

1995 - 1998 University of California at Berkeley

- Graduated December 1998 with a BS degree in Electrical Engineering and Computer Science. Overall GPA: 3.71. Upper Division Technical GPA: 4.00. Member of the Eta Kappa Nu electrical engineering honor society and Tau Beta Pi Engineering Honor Society
- Coursework Includes: C/C++ Design Techniques, Graduate Level Operating Systems, Databases, Compilers, MIPS Assembly Language, Efficient Algorithms, RISC Microprocessor Design, Digital Systems Design

Work Experience

Fall 2001 – Winter 2002 **Robert Bosch Corporation** Palo Alto, CA

Research Fellowship

- In exchange for support of my PhD, I advised the wireless sensor network team at the Robert Bosch Corp. Palo Alto research and technology center (Bosch-RTC). Developed customized protocols to meet application specific needs. Helped with a technology transfer between UC Berkeley Research and Bosch.

Summer 2001 **Intel Research** Berkeley, CA

Researcher

- Helped establish wireless research agenda for the Intel Berkeley Labs. Developed hardware and software infrastructure for the lab's wireless sensor network research platform. Internship culminated in a live demonstration of technology at the 2001 Intel developer's forum of an 800 node network. Participation in Intel Berkeley Labs research activity continues through today.

Fall 1999 – Spring 2001 **UC Berkeley** Berkeley, CA

Graduate Student Researcher

- Worked as part of the Ninja, Millennium, Endeavor, and Webs research projects. The Ninja project developed a fault tolerant, scalable web services platform that ran on top of the campus-wide Millennium Cluster. The Endeavor project explored the future of ubiquitous computing and created the early seed of the Webs project. Under Webs I developed the Mica platform in use by several research organizations to explore wireless sensor networks.

Summer 1999 **Microsoft Corporation** Redmond, WA

Program Manager Intern

- Product Manager on the Visual C++ team. Wrote specifications outlining new

features to be added to the MFC and ATL libraries as well as the Visual C++ shell. Prioritized new features based on importance and made presentations to Visual C++ Team leaders. Worked with developers to incorporate their input and ideas and to get commitments from them to deliver on the feature set.

Summer 1997 **Oracle Corporation** Redwood Shores, CA

Summer Intern

- Member of the Fujitsu Products Group. Worked on porting Oracle 8 to the UXP/DS operating system. Experienced entire Product Development Cycle. Debugged parts of the operating system dependent layer of code including core RDBMS sections. Worked with Clear Case revision control system and performed structured regression testing of Oracle 8. Successfully met product ship deadlines for Oracle 8. Hands on experience working with a team of software engineers to coordinate work in order to obtain a common goal.

Fall 1998 **University of California, Berkeley** Berkeley, CA

Research Assistant

- Designed and implemented a distributed data collection utility to monitor the UC Berkeley NOW Cluster. Used Internet Information Server, SQL Server and Java based I-Spaces to provide a web-based view into the cluster.

Personal

Member of the UC Berkeley Fall ‘99, Ultimate Frisbee team. Vice-president of the Alpha Epsilon Pi Fraternity, Fall ’97. Enjoy mountain biking, skiing, snowboarding, tennis, and softball.