

John Dorsey

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- Objective** Obtain a computer engineering research position with interests in wearable and mobile computing, network protocols, wireless networking, *ad hoc* networking, power-aware devices, and operating systems.
- Education** **CARNEGIE MELLON UNIVERSITY, Pittsburgh, PA**
- Ph.D. Electrical and Computer Engineering August 2004
Thesis: *Game-Theoretic Power Management in Mobile Ad Hoc Networks*
Committee: Dan Siewiorek (advisor), Tuomas Sandholm, David Johnson, Tom Martin
GPA: 3.97
- M.S. Electrical and Computer Engineering May 1999
Report: *Audio Transport in the Wireless Local Area*
GPA: 3.93
- B.S. Electrical and Computer Engineering with an additional major in Computer Science May 1997
University Honors, Carnegie Institute of Technology Research Honors
GPA: 3.93 (ECE: 4.0, CS: 3.94)
- Thesis Summary** ▶ Conceived the first application of game-theoretic mechanism design to real wireless protocols, demonstrated the first strategy-proof mechanism for route selection in power managing *ad hoc* networks.
- ▶ Formulated route selection problem in *ad hoc* networks using private energy information held at nodes, with the goal of incenting truthful preference revelation about network configurations from the nodes.
- ▶ Discovered that nodes must be able to express marginal energy costs of supporting multiple traffic flows. Any mechanism that solves each flow separately yields a suboptimal result, which breaks strategy-proofness. Stated requirement that nodes must solve a single exchange when flows overlap.
- ▶ Implemented Exchange Power Management in *ns* simulation, including distributed spanning tree formation, agent bidding, and heuristic search winner determination. Made *ns* improvements, such as 802.11 IBSS power management and measurement-based radio energy model, available to the public.
- ▶ Developed new structured node mobility models capturing patrol and campus environments. Conducted more than 1,600 experimental trials simulating 165 billion events.
- ▶ Demonstrated reduction in energy variability by factor of 5 relative to 802.11 power management, by factor of 12 when unaffordable routes are used. Showed average-case energy consumption comparable to previous work. Obtained reduction in route setup latency by factor of 16 under power management.
- Experience** ▶ **CARNEGIE MELLON UNIVERSITY, Pittsburgh, PA**
- CHIEF ARCHITECT, WEARABLE GROUP** June 2000 – August 2002
- ◆ Led multidisciplinary team of engineers, software developers, interaction designers, and manufacturers.
 - ◆ Created the first wearable computer to include the Digital Visual Interface, FireWire, and multi-channel online power monitoring, supporting research in power-aware computing and human interfaces.
 - ◆ <http://www.wearablegroup.org/hardware/spot>
- SOFTWARE DEVELOPER, WEARABLE GROUP** September 1999 – August 2002
- ◆ Developed PCMCIA Card Services for StrongARM, ARM Linux port to the StrongARM SA-1110 reference design (Assabet), ARM Linux port to the Spot wearable computer, the *powermon* power monitoring tool, and the *switchd* momentary switch daemon.
 - ◆ Contributed device drivers and Assabet documentation to the ARM Linux kernel project.
 - ◆ Contributed to the Open Handhelds *bootldr* firmware project.

continued

**Experience
(continued)**

- ▶ **AT&T LABORATORIES, San Jose, CA**
ENGINEERING INTERN, INTERNET PLATFORMS DIVISION Summer 1998
 - ◆ Developed GeoPlex Peer software for Linux and IRIX operating systems, supporting a middleware platform for universal authentication, usage recording, and data privacy in IP networks.
 - ◆ Delivered socket encryption kernel modules and a Java configuration front-end.
- ▶ **SILICON GRAPHICS, INC., Mountain View, CA**
ENGINEERING INTERN, SCALABLE SYSTEMS GROUP Summer 1997
 - ◆ Designed and implemented a Crosstalk interconnect simulation harness enabling early development of SuperHIPPI driver and application software.
 - ◆ Developed a distributed simulation framework allowing kernel-mode software executing on an Origin2000 system to interact with an XIO device model running in a remote Verilog environment.
- ENGINEERING INTERN, ADVANCED SYSTEMS DIVISION** Summer 1996
 - ◆ Developed performance/stress suite for the Onyx2/Origin2000 Scalable Shared-Memory Multiprocessor (S2MP) architecture consisting of IRIX-based software and firmware implemented on Serial HIPPI and ATM (OC-3) interfaces.

Publications

- Exchange Power Management for Mobile Ad Hoc Networks*, with D. P. Siewiorek. In *Proceedings of IEEE Infocom 2005*, Miami, FL, Mar. 2005.
- 802.11 Power Management Extensions to Monarch ns*. Technical report, Carnegie Mellon, work in progress.
- The Spot Wearable Computer: Hardware Revision 3*. Technical report, Carnegie Mellon, Nov. 2004.
- The Design of Wearable Systems: A Shift in Development Effort*, with D. P. Siewiorek. In *Proceedings of the International Conference on Dependable Systems and Networks (DSN-2003)*, San Francisco, CA, Jun. 2003.
- Defect Distribution for Wearable System Design*, with D. P. Siewiorek. In *Proceedings of the Sixth International Symposium on Wearable Computers*, Seattle, WA, Oct. 2002.
- Online Power Monitoring for Wearable Systems*, with D. P. Siewiorek. In *Proceedings of the Sixth International Symposium on Wearable Computers*, Seattle, WA, Oct. 2002.

**Professional
Activities**

- ▶ Reviewer, IEEE Dependable Systems and Networks (2004), IEEE Transactions on Computers – Special Issue on Wearable Computers (2002), IEEE Transactions on Mobile Computing (2002), IEEE Transactions on VLSI (2002).
- ▶ Member, ACM, IEEE.

Awards:

Intel Ph.D. Fellowship, Fall 2002 – Summer 2003
Phi Beta Kappa Society
Phi Kappa Phi National Honor Society
Eta Kappa Nu Electrical and Computer Engineering Honor Society; Officer, Fall 1996
Tau Beta Pi Engineering Honor Society
Boeing Corporation Scholarship, Spring 1996