Daniel Grobe Sachs

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Skills:

- Embedded software design and development
- Hardware/software interfaces and hardware abstraction layers
- C and Python languages
- IAR and Freescale Codewarrior development environments
- Linux development and administration
- System architecture, including design and design documentation
- System-level hardware design, including component selection and interfaces between boards and components as well as hardware bring-up and debugging
- Technical leadership and management of engineering resources
- Wireless standards: 802.15.4, ZigBee Smart Energy, Wireless HART, and Bluetooth
- Familiarity with a wide variety of embedded microcontrollers

Experience:

- Staff software engineer, Motorola Solutions, Inc., 2010-present
- Member of technical staff, Software Technologies Group, Inc., 2006–2010
- Research and teaching assistant, University of Illinois at Urbana-Champaign, 1998–2006
- Internships at Motorola (1998), Intel (2000), and MIT Lincoln Labs (2001)
- US Army Construction Engineering Research Labs (CERL), 1995–1998

At Motorola Solutions, I architect and lead the development of software for professional and public safety radio accessories. I also work with senior management and marketing to identify and evaluate new business and product opportunities, and with partners outside Motorola Solutions to enable interoperability between Motorola radios and their products.

At Software Technologies Group, I was involved in a variety of projects centering on low-power wireless sensing and controls. I designed and implemented several ZigBee and ZigBee smart energy products, and lead a team designing a ZigBee Smart Energy infrastructure solution. I also designed and built key components of the WiTECK Wireless HART stack (http://www.witeck.org).

In addition to my software and design work, I also regularly participate in the design of new hardware, review hardware schematics and PCB layouts before production, and bring up and test new or unproven devices. I also have brought several products through wireless certification processes, including ZigBee certification and FCC testing.

Education:

- B.S. Computer Science, University of Illinois at Urbana-Champaign, 1998
- M.S. Electrical Engineering, University of Illinois at Urbana-Champaign, 2000
- Ph.D. Electrical Engineering, University of Illinois at Urbana-Champaign, 2006

- NSF Research exchange fellowship at Tokyo University, Summer 2003
  I spent a summer working at Tokyo University on an NSF research exchange program, and have a limited ability to converse in spoken Japanese.

Research summary:

I was responsible for the architecture and design of much of the NSF-funded UIUC GRACE multimedia power-saving platform (http://rsim.cs.uiuc.edu/grace). This was a multidisciplinary project to design and construct a system that reconfigures each component in a wireless-equipped multimedia laptop to reduce power consumption (and hence increase battery lifetime) while preserving or improving the performance of applications running on the system. This research has been published in my dissertation and in peer-reviewed papers and conference proceedings included in the list below.

Selected publications:

Sachs, D. G. and Jones, D. L. "Stochastic Resource Allocation for Energy-Constrained Systems," *EURASIP Journal on Wireless Communications and Networking,* Vol. 2009, Article ID 246439, 14 pages, June 2009.

Vardhan, V; Yuan, W.; Harris, A. F.; Adve, S.; Kravets, R.; Nahrstedt, N.; Sachs, D. G.; Jones, D. L. "GRACE-2: Integrating fine-grained application adaptation with global adaptation for saving energy." *International Journal of Embedded Systems*, Vol. 4, No. 2, 2009.

Sachs, D.G.; Kozintsev I.V.; Yeung, M.M. "Method for multimedia communication over packet channels." U.S. Patent 7,095,729, issued August 22, 2006.

Sachs, D. G. "A new framework for hierarchical cross-layer adaptation." Ph.D dissertation, University of Illinois at Urbana-Champaign, 2006.

Sachs, D. G.; Yuan, W; Hughes, C. J.; Harris, A.; Adve, S. V.; Jones, D. L.; Kravets, R. H.; Nahrstedt, K. "GRACE: A hierarchical adaptation framework for saving energy." Computer Science, University of Illinois Technical Report UIUCDCS-R-2004-2409, Feb. 2004.

Sachs, D. G.; Adve, S. V.; Jones, D. L. "Cross-layer Adaptive Video Coding to Reduce Energy on General-Purpose Processors." *Proceedings of the International Conference on Image Processing 2003*, Barcelona, Spain, Sep. 2003.

Majumda, A.; Sachs, D. G.; Kozintsev, I. V.; Ramchandran, K.; Yeung, M. M. "Multicast and unicast real-time video streaming over wireless LANs." *IEEE Transactions on Circuits and Systems for Video Technology*, Vol. 12, No. 6, June 2002.