

# Daniel Grobe Sachs

469 N. Howard Ave  
Elmhurst, IL 60126  
(847) 236 9169

Electronic mail: [dgsachs@nekito.net](mailto:dgsachs@nekito.net)

## Education:

University of Illinois at Urbana-Champaign: B.S. Computer Science with Highest Honors, May 1998.  
University of Illinois at Urbana-Champaign: M.S. Electrical Engineering, May 2000.  
University of Illinois at Urbana-Champaign: Ph.D. Electrical and Computer Engineering, May 2006.

## Current Position

- Software Technologies Group (Westchester, IL): Member of Technical Staff (August 2006 to present)  
Responsible for the design and implementation of industrial wireless stacks, devices, and applications, primarily based on IEEE 802.15.4 radios, including participation in several standardization efforts for industrial wireless networks.

## Prior Experience and Academic Appointments:

- University of Tokyo (Tokyo, Japan): NSF/JSPS East Asia Summer Internship (Summer 2003)  
Worked with the Aoyama-Morikawa lab at the University of Tokyo on software development for the U<sup>3</sup> ubiquitous sensor network project
- University of Illinois at Urbana-Champaign: Coordinated Sciences Laboratory (Urbana, IL)  
Research Assistant, GRACE project: August 2002-July 2006  
Primary responsibility for the creation of adaptive applications and defining interfaces between system layers for an end-to-end energy optimization system for mobile multimedia devices. Collaborated with team developing Linux test-bed implementation of system, including participation in kernel scheduler and network-driver modifications.
- University of Illinois at Urbana-Champaign: Coordinated Sciences Laboratory (Urbana, IL)  
Research Assistant, May 1999-August 2002, NSF Compiler Grant  
Researched optimization schemes for transmission of video and images over wireless channels, as well as the design and construction of test bed hardware to implement joint source/channel coding schemes
- Massachusetts Institute of Technology: MIT Lincoln Labs (Lincoln, MA)  
Summer Research Program (June 2001-August 2001)  
Responsible for building Linux-based PC-104 sensors for a wireless sensor network project (SensIT), and contributed to the design and development of an ad-hoc, self-organizing sensor network communications protocol ("DRP" or Declarative Routing Protocol)
- University of Illinois: Department of Electrical and Computer Engineering  
Teaching Assistant: August 1998-December 2000 (simultaneously with RA duties)  
Assisted the curriculum design for and teaching of ECE 320, a DSP laboratory course.
- Intel Corporation: Microprocessor Research Labs (Santa Clara, CA)  
Summer Internship: May 2000-August 2000  
Researched the transmission of video over a wireless 802.11b network. This work included characterization of the 802.11b transmission environment, and the development of a hybrid of retry-based and forward-error-correction protocols for transmission of media streams; also developed a test bed system consisting of a prototype implementation of the hybrid-ARQ protocol and an 802.11b network
- Motorola, Inc.: Cellular Infrastructure Group (Arlington Heights, IL)  
Summer Internship: May 1998-August 1998  
Assisted in the design and implementation for DSP hardware and software on a 3G CDMA mobile prototype system
- US Army Construction Engineering Research Laboratories (Champaign, IL)  
Student Research Contractor: October 1995-May 1998

Design and implementation of a wind noise-resistant version of the CERL Noise Monitoring and Warning System, a system designed to capture and log blast noises generated by US Army bases to assist in noise mitigation and evaluating noise complaints

#### Educational Experience:

- UIUC Graduate Classwork, August 1998 to present
  - Coursework emphasizing wireless communications, digital signal processing, computer architecture and algorithms
  - Research on transmission of images and video over wireless, including optimization schemes and hardware implementation; current project is a multidisciplinary wireless media project integrating the media encoder and decoder with hardware architecture, network management, and resource allocation to minimize end-to-end energy requirements.
  - Seven semesters of undergraduate Japanese, Fall 2000 to Fall 2003
- UIUC Undergraduate Classwork, August 1994-May 1998
  - CS background including senior-level courses in multimedia, operating systems, and real-time systems
  - ECE coursework including VLSI design, circuits and signal processing
  - Senior project: design and implementation of data acquisition and analysis software for a cosmic ray telescope

#### Activities:

- Association for Computing Machinery, UIUC Student Chapter (member 1994-present)
  - ACM at UIUC Student Executive Board member, 1995-2001
  - ACM at UIUC Student Chapter Vice Chair, 1999-2000 Academic Year
  - ACM Reflections|Projections Midwest Student Conference Staff, 2000 and 2001

#### Selected Publications:

- 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, September 2003.
- Kim, Il-Min; Kim, H-M.; Sachs, D. G.; "Power-Distortion Optimized Mode Selection for Transmission of VBR Videos in CDMA Systems" *IEEE Transactions on Communications*, Volume 51 Issue 4, April 2003, page 525-529.
- 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*, Volume 12 Issue 6, June 2002, page 524 -534.
- Adve, S.V.; Harris, F.; Hughes, C.J.; Jones, D. L., Kravets, R. H.; Nahrstedt, K.; Sachs, D.G.; Sasanka, R.; Srinivasan, J.; Yuan, W. "The Illinois GRACE Project: Global Resource Adaptation through CoopERation," *Proceedings of the Workshop on Self-Healing, Adaptive, and self-MANaged Systems (SHAMAN)* (held in conjunction with the 16th Annual ACM International Conference on Supercomputing), June 2002.
- Sachs, D. G.; Raghavan, A.; Ramchandran, K. "Wireless image transmission using multiple-description based concatenated codes." *Proceedings of the SPIE Conference on Image and Video Communications and Processing 2000*, January 2000, San Jose, CA.

#### Awards and Honors:

- NSF Graduate Research Fellowship Honorable Mention
- University of Illinois Fellowship for first-year graduate students
- University of Illinois Bronze Tablet
- Institute of Noise Control Engineering Undergraduate Research Award, May 1998
- John R. Pasta Outstanding CS Junior Award, Spring '97