

## Jeffrey J. Evans

### Business Address:

Department of Electrical and  
Computer Engineering Technology  
Purdue University  
401 N. Grant Street  
West Lafayette, IN 47907-2021  
(765) 494-7725 (765) 496-1354 (Fax)  
email: [jje@purdue.edu](mailto:jje@purdue.edu)  
URL: <http://web.ics.purdue.edu/evans6/>

### Education

Illinois Institute of Technology, Chicago, IL.  
Ph.D. in Computer Science (December 2005)

**Concentrations:** Self-managing networks, high performance cluster and distributed computing, sensor networks, large-scale performance modeling and simulation of stochastic systems, advanced data transport protocols.

**Dissertation:** Modeling Parallel Application Sensitivity to Network Performance

**Adviser:** Dr. Cynthia S. Hood

Illinois Institute of Technology, Chicago, IL.  
M. S. Computer Science (December 2000)

**Concentrations:** Modeling and simulation of communication protocols, media access controls, and schedulers

**Thesis:** Modeling and Simulation of Mixed Traffic on a Prioritized Shared Medium

**Adviser:** Dr. Cynthia S. Hood

Purdue University Calumet, Hammond, IN.  
B. S. in Electrical Engineering Technology (May 1982)

### Appointments

Purdue University, West Lafayette, IN Associate Professor of Electrical and Computer Engineering Technology.	2009 - present
Purdue University, West Lafayette, IN Assistant Professor of Electrical and Computer Engineering Technology.	2003 - 2009
Saint Xavier University, Chicago, IL Adjunct Instructor of Computer Science. Taught a graduate level computer networks course in the Department of Mathematics and Computer Science. Also advised graduate students.	2003
Illinois Institute of Technology, Chicago, IL Research Assistant in the Department of Computer Science funded by NSF Grant 9984811.	2003
Argonne National Laboratory, Argonne, IL Guest graduate appointee in the Mathematics and Computer Science Division (MCS). Worked under the direction of William D. Gropp.	2002 - 2004

### Professional Activities

International Journal of Network Management 2008 - present. Member of the Editorial Board.

IEEE senior member 2006 - present. Member of the Communications and Computer societies.

IEEE member 1990 - 2006. Member of the Communications and Computer societies.

ACM member 2004 - present.

ASEE member 2004 - present.

Service on numerous Technical Program Committees including SC06, SC07, GreenCom '07, and LCN 2004-2008

Panel Reviewer, NSF, 2006-2009

NFPA member 1995 - 1997. NFPA 720 technical committee - Application of carbon monoxide detectors.

### Courses Developed

- [1 ] ECET 58100-012: Embedded Systems Security, First Offering: Spring 2009
- [2 ] ECET 58100-007: High Performance Computing Systems, First Offering: Fall 2007
- [3 ] ECET 58100-013: Selected Topics in Sensor Networks, First Offering: Fall 2006
- [4 ] ECET 32500: Computer Architecture, Modeling, and Performance Analysis, First Offering: Spring 2005
- [5 ] ECET 37400: Digital Communications, First Offering: Fall 2004
- [6 ] ECET 47400: Digital Communications, First Offering: Fall 2003
- [7 ] ECET 48300: Network Fundamentals with Microcontrollers, First Offering: Spring 2006

### Journal Articles

- [1 ] Evans J., Janek J., (2008). Predicting ground effects of omnidirectional antennas. *International journal of sensor networks*, (in review).
- [2 ] Evans J., Hood C., (2008). A network performance sensitivity metric for parallel applications. *International journal of high performance computing and networking*, (to appear).
- [3 ] Evans, J., & Hood, C., (2008). A model for parallel application run time sensitivity to network performance. *International journal of high performance computing and networking*, (to appear).
- [4 ] Evans J., Janek, J., Gum A., & Hunter B., (2008) Wireless Sensor Network Design for Flexible Environmental Monitoring. *Journal of Engineering Technology*, Spring 2008 pages 48-54.
- [5 ] Hu, F., & Evans, J., (2008). Power and environment aware control of beowulf clusters. *Cluster Computing*, March, 2009.
- [6 ] Zhao, Y., Evans, J., Won, Y., & Harris, M., (2008). Study of calcium alginate sol-gel transformation by population balance model. *Biomacromolecule*, (in review).
- [7 ] Weakman, K., Barnett, R., McWilliams, D., Evans, J., (2007). Consumer appliance data collection using an embedded web server. *Journal of technology management and innovation*, 2007. (to appear).
- [8 ] Evans J., Hood C., Dickens P., Traffic Analysis and Simulation of a Prioritized Shared Medium, *SIMULATION: Transactions of the Society for Modeling and Simulation International*, Vol. 79, No. 4, pages 211-231, April 2003.
- [9 ] Evans J., Hood C., Modeling and Simulation of Mixed Traffic on a Prioritized Shared Medium, *International Journal of Network Management*, vol. 13, no. 1, pages 11-31, Jan.-Feb., 2003.

**Conference Proceedings**

- [1 ] Howard, A., Younts, A., Smith, P., Evans J., Bringing Disruptive Technology to Competition, *Proceedings of the 9<sup>th</sup> LCI International Conference on High-Performance Clustered Computing*, March 2009, CDROM.
- [2 ] Howard, A., Younts, A., Smith, P., Evans J., Undergraduate experience in clustering at the SC07 cluster challenge, *Proceedings of the 8<sup>th</sup> LCI International Conference on High-Performance Clustered Computing*, May 2008, CDROM (Best undergraduate student paper award).
- [3 ] Evans J., Harding G., Experiences with remote access to high performance computing systems for computer engineering technology, *Proceedings of the IEEE Frontiers in Education Conference, FIE2007*, October 2007.
- [4 ] Evans J., Undergraduate research experiences with wireless sensor networks, *Proceedings of the IEEE Frontiers in Education Conference, FIE2007*, October 2007.
- [5 ] Evans J., Hood C., A Network performance sensitivity metric for parallel applications, *Proceedings of the Fifth International Symposium on Parallel and Distributed Processing and Applications, ISPA07*, August 2007, (Best Paper Award).
- [6 ] Hu, F., Evans J., Linux kernel improvement: Toward dynamic power management of beowulf clusters, *Proceedings of the 8th LCI International Conference on High-Performance Clustered Computing*, May 2007, CDROM.
- [7 ] Evans J., Hood C., PARSE: A tool for parallel application run time sensitivity evaluation, *Proceedings of the IEEE International Conference on Parallel and Distributed Systems, ICPADS2006*, pgs. 475-484, July 2006.
- [8 ] Evans J., Kirleis M., Smith C., Teamwork experiences in process automation for precision chemical deposition, *Proceedings of the 2006 ASEE Conference and Exposition*, June 2006.
- [9 ] Evans J., Wireless sensor networks in electrical manufacturing, *Proceedings of the IEEE EMCWA conference 2005*, October, 2005.
- [10 ] Evans J., Hood C., Network performance variability in NOW clusters, *Proceedings of the 5th IEEE/ACM conference on cluster computing and the Grid (CCGrid2005)*, May, 2005.
- [11 ] Evans J., Hood C., Application communication emulation for performance management of NOW clusters, *Proceedings of the 9th IFIP/IEEE International Symposium on Integrated Network Management*, May, 2005.
- [12 ] Evans J., Hood C., Baik, S., Kroculik, J. Network adaptability in clusters and Grids, *Proceedings from the Conference on Advances in Internet Technologies and Applications (CAITA)*, July, 2004.
- [13 ] Hassan, L., Hardy, J., Dean, N., Rawles, P., Smith, A., Goldman, J., Evans, J. A model for telecommunications and networking technology curricula. *Proceedings of the Center for Telecommunications Systems Management Conference*, 2004.
- [14 ] Evans J., Hood C., Gropp W. Exploring the relationship between parallel application run-time variability and network performance in clusters, *Workshop on High-Speed Local Networks (HSLN), IEEE Conference on Local Computer Networks (LCN)*, pages 538-547, October, 2003.
- [15 ] Evans J., Baik S., Hood C., Gropp W. Toward understanding soft faults in high performance cluster networks, *IFIP/IEEE International Symposium on Integrated Network Management*, pages 117-121, March, 2003.

**Selected Presentations**

- [1 ] Adaptive Cyberinfrastructure: Toward Reliable and Sustained Performance, Engineering Research Seminar, Grand Valley State University, March 2008.
- [2 ] Adaptive Cyberinfrastructure: Toward Reliable and Sustained Performance, Campus Cyberinfrastructure: Purdue BoilerGrid and FermiGrid Campus Grids, Fermi National Accelerator Laboratory, August 2007.
- [3 ] Adaptive Computing Systems - From Embedded Sensors to PetaFLOPS, IEEE Student Chapter, Purdue University, March 2007.
- [4 ] Herrick, R., Evans, J., & Moore, G, (2007). Purdue University - Electrical Engineering Technology Curriculum. *Fourth international symposium on energy, 2007.*
- [5 ] Parallel Application Sensitivity to Network Performance in NOW Clusters, Cyber-EnvironmentPurdue Workshop, Purdue University, August 2005.
- [6 ] Communication Fundamentals and Protocols, *IEEE Central Indiana PES/IAS Short Course*, March, 2005.
- [7 ] Packet Data, Digital Communications, Wireless Methods and Security, *IEEE Central Indiana PES/IAS Short Course*, March, 2005.
- [8 ] Security Overview: VoIP in the Last Mile, *IEEE Fox Valley Subsection/IIT Center for Professional Development/FBI Computer and Network Security Workshop*, October 29-30, 2002.
- [9 ] Passive Optical Networks - Last (First) Mile Access, *Advanced Technology Group, BMG, Tellabs Inc.*, December 2001.
- [10 ] Barbour D., Dunne B., Evans J., Bridging the Circuit Switched and Packet Switched Paradigms in the Cable Access Market, *2001 Current Practices Seminar, Tellabs, Inc.*, June 2001.
- [11 ] Evans J., VoIP Architectural Alternatives, *Advanced Technology Group, BMG, Tellabs Inc.*, October 2000.

**Selected Technical Reports**

- [1 ] Evans J., Hood C., Gropp W., Exploring the Relationship Between Parallel Application Run-Time Variability and Network Performance in Clusters, *Network Systems Laboratory, Illinois Institute of Technology*, June, 2003.
- [2 ] Evans J., Modeling Parallel Application Sensitivity to Network Performance, Network Systems Laboratory, Illinois Institute of Technology, May 2003.
- [3 ] Evans J., Baik S., Hood C., Gropp W. Toward Understanding Soft Faults in High Performance Cluster Networks, *ANL/MCS-PI017-0103, Argonne National Laboratory*, March, 2003.
- [4 ] Evans J., Sauer J. A Simple Ethernet CPE Multiplexer, *Advanced Technology Group, BMG, Tellabs Inc.*, April 2002.
- [5 ] Evans J., Sauer J. Point-to-Point Protocol Over Ethernet Physical Layer (PPPoEPHY), *Advanced Technology Group, BMG, Tellabs Inc.*, March 2002.
- [6 ] Barbour D., Evans J., Kulpinski J. Expandable Cable Modem Platform Analysis and Preliminary Planning, *Advanced Technology Group, BMG, Tellabs Inc.*, November 2001.
- [7 ] Evans J., Cablespan HFC Video, Data and Voice Access System - CBR Services Security Part 2: Requirements Analysis and Solution Recommendations, *Advanced Technology Group, BMG, Tellabs Inc.*, September 2001.

- [8 ] Evans J., Cablesan HFC Video, Data and Voice Access System - CBR Services Security Part 1: Problem Description, *Advanced Technology Group, BMG, Tellabs Inc.*, August 2001.
- [9 ] Evans J., Cablesan HFC Video, Data and Voice Access System - CBR Services Security: RC4 vs. AES (Rijndael) in CBR Media Streams, *Advanced Technology Group, BMG, Tellabs Inc.*, August 2001.

### Research Grants and Contracts

- [1 ] NSF OCI: HPCOPS: *A TeraGrid Crossroad Leading to New Science and Education*  
PI: Gerry McCartney  
Amount: \$1.7M  
Duration: 2008 - 2010
- [2 ] General Motors: *Wireless Access for Vehicular Environments*  
PI: Jeffrey J. Evans  
Amount: \$10,000  
Duration: 2007 - 2009
- [3 ] Purdue University Rosen Center for Advanced Computing: *High Performance Computing Education Infrastructure*  
PI: Jeffrey J. Evans  
Amount: \$31,000  
Duration: 2007 - 2009
- [4 ] Purdue Discovery Park, Cyber Center: *Modeling Network Induced Application Run Time Sensitivity in High-Performance Distributed Computing*  
PI: Jeffrey J. Evans  
Amount: \$9,240  
Duration: 2007 - 2008
- [5 ] Purdue Discovery Park, Center for the Environment: *Wireless Sensor Networks for Spatial Observations of Environmental Properties*  
PI: Jeffrey J. Evans, Co-PI: Keith Cherkauer  
Amount: \$74,910  
Duration: 2006 - 2008
- [6 ] Purdue Discovery Park, Bindley Biosciences Center: *Automation of Membrane Protein Function Screening using Microchip Technology*  
PI: Gil Lee, Co-PI: Jeffrey J. Evans  
Amount: \$45,000  
Duration: 2005

**Professional Experience**

Independent Consultant 2002 - present  
Perform consulting services of network modeling and simulation research, data analysis, IT analysis, software architecture and code review, technology expertise for patent infringement litigation, technical training course design and delivery. Clients include small to large businesses, academic institutions, and law firms.

Tellabs Inc., Naperville, IL 1996 - 2002  
Staff Engineer (2001-2002)  
Member of advanced technology team responsible for forward-looking technology investigation. Contributions included:

- Generated project proposals, feasibility studies, system and security architectures and analyses in the areas of Hybrid Fiber Coax (HFC) Voice over IP (VoIP) and data services and next generation customer premise equipment (CPE). See selected presentations and technical reports.
- Presented results to management and peers in both small and large forums.
- Provided DOCSIS, PacketCable, and IP security expertise (including IPSec, PKI, Kerberos, ciphers, etc.) to systems and development engineering groups.
- Developed a firmware architecture and development plan using DOORS and Rhapsody (UML) for an integrated multiple interface group GR-303 switch interface to be used with the company's voice and data over cable system.

Lead Engineer (1998-2001)  
Member of the company's voice and data over cable system switch interface development group. Selected contributions include:

- Completed firmware development for a GR-303 (GR-2833) switch interface using object-oriented and structured design techniques.
- Requirements generation (DOORS), high/low level design (FrameMaker), coding (68360 Assembly and C using pSOS in ClearCase environment), test plans (FrameMaker) and reports (DDTS).
- Performed modeling and simulation of the company's voice and data over cable system and its components using OPNET Modeler software.

Senior Member of Technical Staff (1996-1998)  
Member of the company's voice and data over cable system Remote Service Unit (RSU) development group. Contributions include:

- Completed firmware development of Diagnostics, Call Processing, Radio Control and Status Modules for the Issue 4 & M QPSK Remote Service Unit (RSU) using structured design techniques and assembly language on an 8051 microprocessor.
- Designed, coded, and tested tools for object file integrity verification (checksum calculation and file processing) using GNU C and C++.
- Completed firmware development of Diagnostics, Call Processing, and Status Modules for the Issue 4 & M OFDM Remote Service Unit (RSU) using structured design techniques and assembly language on an Oak DSP.

BRK Brands, Inc., Aurora, IL 1994 - 1996

Manager of Advanced Development (1996)

Managed a group of four senior level scientists and engineers. Reported directly to the Vice-President of Engineering.

- Performed discovery and/or location of new technologies useful for the company's line of home safety products.
- Negotiated contracts with various strategic partners in excess of \$2M for co-development of chemical gas sensors (carbon monoxide, etc.), computation algorithms, and semiconductor devices for use in the company's products.

Staff Engineer (1995)

- Performed sensor, electronics, and firmware (Motorola 68HC05 assembly language) discovery and design for next generation residential carbon monoxide detector.
- Completed firmware design, assembly language coding, and documentation using Microchip PIC16C54 and PIC16C71 microcontrollers for the company's plug-in residential carbon monoxide detector.

Project Engineer (1994-1995)

- Completed firmware design, assembly language coding, and documentation using Motorola 68HC05 microcontroller for UL listed battery powered residential carbon monoxide detector. Product was introduced on time and within five percent of target cost.
- Developed carbon monoxide sensor and semiconductor characterization tools utilizing "C" programming in LABWindows development environment.
- Performed activities associated with regulatory agency compliance and product release.

DAI Controls, Lisle, IL 1990 - 1994

Hardware Engineer

- Developed electrical and electronic hardware design of a high-end engine control system used for natural gas (NG) engines using a 68332 microcontroller.
- Designed and successfully tested prototype 350 watt switched-mode power supply for NG fuel injector control.
- Completed electronic and mechanical enclosure design of the company's first natural gas conversion system, an American Trucking Association (ATA) data acquisition system, and a particulate trap oxidizer system used for municipal buses. Fleets were deployed in Minneapolis and Los Angeles.

Bruker Medical Imaging, Inc., Lisle, IL 1988 - 1990

Chief Engineer

Responsible for the design and development of all electrical and electronic hardware systems for the company's Computed Tomography (CT) scanner system.

- Managed a staff of three engineers and technicians.
- Developed several VME bus circuit designs using 68000, 68020, and 68030 microprocessors.
- Developed analog circuit designs to accurately measure currents less than 1 pA.

### **Other Professional Experience**

Federal Signal Corporation, University Park, IL Hardware Engineer

Bell Telephone Laboratories, Naperville, IL Senior Technical Associate

December, 2009