

James M. Conrad, Ph.D., PE, PMP

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EDUCATION

- Ph.D.** Electrical And Computer Engineering, North Carolina State University, Raleigh, NC, May 1992.
- M.S.** Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, May 1987.
- B.S.** Computer Science, University of Illinois - Urbana/Champaign, Urbana, IL, May 1984.

PROFESSIONAL EXPERIENCE

ACADEMIC WORK EXPERIENCE

- Associate Department Chair**, Department of Electrical and Computer Engineering **2010-Present**
- Associate Professor**, Department of Electrical and Computer Engineering **2003-Present**
University of North Carolina at Charlotte, Charlotte, NC (tenured in 2007)
Teach graduate and undergraduate classes. Conduct research in embedded systems, communications, computer architecture, robotics, and engineering education.
- Adjunct Assistant Professor**, Department of Electrical and Computer Engineering **1996-2003**
- Adjunct Associate Professor**, Department of Electrical and Computer Engineering **2004-Present**
North Carolina State University, Raleigh, NC
Instructor for undergraduate classes: Introduction to Microprocessors, Introduction to Computer Organization, Introduction to Embedded Systems, and Design of Complex Digital Systems.
- Assistant Professor**, Department of Computer Systems Engineering **1992-1995**
University of Arkansas, Fayetteville, AR (Adjunct faculty in Electrical Engineering)
Taught graduate and undergraduate classes. Conducted research in parallel processing, computer architecture, multichip modules, artificial intelligence, robotics, and engineering education. Served as thesis advisor and directed the research of 11 graduate students.
- Graduate Assistant/Instructor**, Department of Electrical and Computer Engineering **1990-1992**
North Carolina State University, Raleigh, NC
Instructor for the undergraduate Microprocessors class. Developed course materials, lectured course, and supervised six teaching assistants. **Research Assistant** - Designed parallel algorithms under Dr. Dharma P. Agrawal, funded by two fellowships.
- Instructor (part time)**, Continuing Education Department **1988-1989**
Wake Technical Community College, Raleigh, NC
Instructor for “Introduction to Computers and DOS” and “Advanced DOS” classes. Developed course materials and created a computer-aided instruction program of course concepts.

INDUSTRY WORK EXPERIENCE

- Project Manager/Senior Staff Engineer**, CDMA Consumer Products **1997-2003**
Sony Ericsson Mobile Communications, Inc., Research Triangle Park, NC
Project manager and test team leader for Sony Ericsson’s CDMA consumer and TDMA business wireless cellular phone products, including handsets, base stations, and control systems.
- Senior Software Engineer**, Engineering Department, BPM Technologies, Greenville, SC **1996-1997**
Manufacturer of a 3-dimensional printer used in the Mechanical Design field.
Was responsible for designing and implementing the computer hardware and software architecture for the BPM Personal Modeler. Lead engineer of a multi-discipline design team.

Senior Associate Programmer, Product Assurance **1984-1990**
 IBM - Communications Systems, Research Triangle Park, NC

Worked as Product Assurance and Software/Hardware Test Leader. Developed plans for testing, including employee and hardware assignments. Monitored development and test activities and made assurance assessments and recommendations based on observations. Supervised test team.

CERTIFICATIONS

- Professional Engineer: Electrical and Computer: Computer, NC license #036359.
- Project Management Institute, Certified Project Management Professional (PMP).

TEACHING

Courses Taught - University Of North Carolina at Charlotte

- ECGR 2181 – Logic Design I (2005, 2006, 2008, 2009)
- ECGR 3183 – Computer Organization and Programming Languages (2004)
- ECGR3182/4182 - Independent Studies (4 projects)
- ECGR 3253 - Senior Design I (2006, 2007(2), 2008)&&
- ECGR 3254 - Senior Design II (2007(2), 2008)&&
- ECGR 3253/3254 - Senior Design Project - Student Advisor (15 projects 2003-present)
- ECGR 4101/5101 – Introduction to Embedded Systems (2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010**)
- ECGR 4161/5196 – Introduction to Robotics (2009, 2010)
- ECGR 5892- Independent Studies (13 projects)
- ECGR 6185/8185 – Advanced Embedded Systems (2004, 2005, 2006, 2007, 2008, 2009, 2010)

&& Reestablished the College of Engineering Multidisciplinary Senior Design Program

** Indicates courses taught to both live and distance education students

Courses Taught - University Of North Carolina at Charlotte – Continuing Education

- Project Risk Management (10/2006, 2/2007, 5/2007, 9/2007, 10/2007(2), 12/2007, 1/2008)
- Project Schedule Development (2/2007, 3/2007, 5/2007, 10/2007)
- Microsoft Project for Project Managers (3/2007, 10/2007)
- Introduction to Project Management (5/2008)

Courses Taught - North Carolina State University

- ECE 206 - Introduction to Computer Organization (2000, 2001(2)).**
- ECE 218 - Introduction to Microprocessors and Assembly Language Programming (1991, 1992, 1998, 1999(2), 2000).**
- ECE 292D - Introduction to Engineering Skills and Design (Assisted - 1996).
- ECE 292B - Simple Robots and Microprocessors (2001, 2002)
- ECE 306 – Introduction to Embedded Systems (2003(3))
- ECE 406 - Design of Complex Digital Systems (2002, 2003)**
- ECE 480/481 - Senior Design Project - Student Advisor (7 projects 1999-2003)
- ECE 497 - Special Topics - Parallel Programming (1991).

** Indicates courses taught to both live and distance education students

Courses Taught - University Of Arkansas

- CSEG 1913: Introduction to Computers
- CSEG 2723: Computer Programming Applications

- CSEG 3933: A Programmer's Introduction to C
 - CSEG 4523: Microprocessor Programming Techniques
 - CSEG 457V: Senior Design Project
 - CSEG/ELEG 4983: Computer Hardware Organization/Design
 - CSEG 5053: Real-Time Data Acquisition Systems
 - CSEG 5303: Parallel Programming**
 - ELEG 5273: Electronics Packaging (Team Taught)
 - ELEG 6273: Advanced Electronics Packaging (Team Taught)
 - GNEG 5003: Topics in Engineering for Teachers
 - PHSC 5003: Higher Order Thinking in Science (Science Crusade)

 - CSEG 410: Special Topics - Software Quality Assurance
 - CSEG 410: Special Topics - Advanced Motorola Processors
 - CSEG 410: Special Topics - Design of a Motorola-based Microcontroller Board
 - CSEG 410: Special Topics - A Microcontroller-based Speech Device
 - CSEG 410/510: Special Topics - Parallel Programming
 - CSEG 410/510, ELEG 488/588: Special Topics - Mobile Robots
 - CSEG 457v: Senior Design Project - Student Advisor (14 projects 1992-1995)
 - ELEG 588: Special Topics - Design of a Motorola-based Computer Board
- ** Indicates courses taught to both live and distance education students

UNIVERSITY AND COMMUNITY SERVICE UNIVERSITY SERVICE

Electrical and Computer Engineering Department

- Department Review Committee (Tenure Review), 2007 – present (chair 2007-2008, 2009-2010).
- Computer Engineering Focus Area Improvement Team (Computer Engineering Curriculum Committee), 2003 – present (chair from 2005 – present).
- Faculty Search Committee 2003 – 2006, 2008 (chair from 2003-2004, 2005-2006).
- Industry Advisory Committee, faculty representative, 2004 – 2007.
- Advisor, Student Branch, IEEE, 2004 - 2009.
- Undergraduate Curriculum Committee 2005 – present (chair 2008 – present).
- Awards Committee 2005 – 2007.

Campus/College

- Faculty Council, Department Representative, 2009 - present.
- College of Engineering, College of Engineering Faculty Organization, President, 2008-2009.
- College of Engineering, Search Committee, Faculty Associate for Transfer Students, 2008.
- College of Engineering, Systems Engineering Faculty Search Committee, 2008.
- College of Engineering, College of Engineering Faculty Organization, President Elect, 2007-2008.
- University Search Committee, Executive Director of Technology Transfer, 2007.
- College of Engineering, Search Committee, Director of MAPS program 2006.
- College of Engineering Computing Committee, 2003 - 2005.
- Summer Sessions Committee (FASSC) 2005 – 2008.

SERVICE AS A REVIEWER

Professional Reviews/Panels

- National Science Foundation, Small Business Innovation Research (SBIR), Robotics I, August 18, 2009.
- Developing Hispanic-Serving Institutions Program, Department of Education, July 2009.
- Minority Science and Engineering Improvement Program, Department of Education, May 2009.
- Graduate Assistance in Areas of National Need, Department of Education, April 2009.
- Minority Science and Engineering Improvement Program, Department of Education, June 2008.
- Atlantis: Fund for the Improvement of Postsecondary Education, Department of Education, April 2008.
- Atlantis: Fund for the Improvement of Postsecondary Education, Department of Education, June 2007.
- National Science Foundation, Small Business Innovation Research (SBIR), Robotics I, August 17, 2005.
- Minority Science and Engineering Improvement Program, Department of Education, April 2004.
- Department of Energy, Small Business Innovation Research (SBIR)/Small Business Technology Transfer Research (STTR) Program, February 2004.
- Minority Science and Engineering Improvement Program, Department of Education, April 2003.
- Graduate Assistance in Areas of National Need, Department of Education, February 2003.
- Joint Task Force of ACM & IEEECS on Computer Engineering Curriculum, November 9, 2002.
- National Science Foundation, Instrumentation and Laboratory Improvement Panel, January 1995.

Publication Reviews - Books

- Wiley Books, book chapters, Hardware/Software Codesign, June 2008.
- Wiley Books, book chapters, Microprocessors, April 2008.
- Thompson Books, book re-write, Embedded Systems, February 2008.

- Wiley Books, book proposal, *Zigbee or Wireless Control and Sensor*, July 2007.
- Cambridge University Press, book proposal, *First Course in Digital Circuits*, June 2007.
- Wiley Books, book proposal, *Digital Design*, May 2005.
- Morgan Kaufmann Publishing, book chapters, *Computers as Components 2e*, February – May 2005.
- Wiley Books, book proposal, *ZigBee Systems and Applications*, March 2005.
- Morgan Kaufmann Publishing, book proposal, *Computers as Components 2e* (new proposal), September 2004.
- McGraw-Hill, book proposal, *Introduction to Computing Systems: From Bits and Gates to C and Beyond* (3ed.), June 2004.
- IEEE CS Press, chapter, *Volume 1, The Software Engineering Development Process*, May 2004.
- Addison Wesley Publishing, book proposal, *Engineering Ubiquitous Systems*, February 2004.
- Morgan Kaufmann Publishing, book proposal, *Computers as Components 2e*, December 2003.
- Wiley Publishing, book proposal, *Introduction to Computer Architecture*, July 2003.

Publication Reviews - Journals

- IEEE Transactions on Parallel and Distributed Systems (1992, 1993, 2005, 2006, 2007(2))
- IEEE Software (1998, 1999, 2001)
- IEEE Computer (1994)
- IEEE Parallel & Distributed Technology: Systems and Applications (1994, 2005)
- IEEE Transactions on Computers (1993)
- IEEE Transaction on Neural Networks (1992)
- Communications of the ACM (2002(2))
- Journal of Parallel and Distributed Computing (1991, 1992, 1993, 2007)
- International Journal of Communication Systems (2006)
- International Journal of Distributed Sensor Networks (2006)
- iNEER Special Volume for 2005, Chapter, September (2004).
- Microelectronics and Reliability (1993, 1994)
- Journal of Computer and Software Engineering (1994 (2))
- International Journal of High Speed Computing (1993 (2), 1994)
- International Journal in Computer Simulation (1994)
- Control Engineering Practice (1993)

Publication Reviews - Conferences

- American Society for Engineering Education Conference (2006, 2007, 2008, 2009, 2010)
- Communication and Networking Simulation Symposium (2007, 2008, 2010)
- International Symposium on Wireless Communication Systems (2006)
- IEEE Wireless Communications & Networking Conference (2005, 2006)
- Project Management Institute North American Congress (2005)
- IEEE SoutheastCon (2005, 2006, 2007, 2009)
- Workshop on Computer Architecture Education (2004, 2005, 2006, 2007, 2008, 2009)
- Frontiers in Education Conference (2002, 2004, 2005, 2009).
- International Conference on Engineering Education (2004, 2006)
- International Conference on Parallel Processing (1990, 1992, 1994)
- International Conference on Massively Parallel Processing using Optical Interconnections (1996)
- International Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunications Systems (1995, 2009)
- International Conference on Distributed Computing Systems (1992, 1993)
- International Parallel Processing Symposium (1992)

- Hawaii International Conference on Systems Sciences (1993)
- Symposium on Applied Computing (1992)
- Arkansas Computer Conference (1993, 1994, 1995)

Publication/Profession Reviews

- Kota Solomon Raju, PhD Dissertation, *System Level Architectures and Optimal Mapping for Reconfigurable Computing*, Indian Institute of Technology, Roorkee (2008).
- Anil Kumar Verma, PhD Dissertation, *Design and Development of Routing Protocol for Mobile AdHoc Networks(MANETs)*, Thapar University, India (2008).

INTERNATIONAL/NATIONAL SERVICE

Professional Activities

- IEEE, NC Council, Chair 2008- 2009
- IEEE, Charlotte Section, Chair, 2006 – 2007.
- IEEE, Region 3 Executive Committee, 2006 - present.
- IEEE Education Society, Charlotte Chapter, Chair 2007 – present.
- IEEE Computer Society, Charlotte Chapter, Chair 2005.
- IEEE, Charlotte Section, Executive Committee, 2004 – present.
- Advisor, UNC Charlotte IEEE Student Chapter, 2004 – 2009.
- Board of Advisors, Agile – Carolinas Professional Group, 2008 – present.
- ASEE Design in Engineering Education Division VP/Secretary/Treasurer, 2008-2009.
- Wireless Industrial Networking Alliance (WINA), System Integration Technical Committee, 2004 – 2006.
- Meetings Chair, Charlotte Software Process Improvement Network (an SEI organization), 2004 - 2006.
- IEEE Eastern NC Section, Meetings Committee Chair, 2001 - 2003.
- Scientist in the Classroom, visit schools to discuss engineering and science, developed hands-on activity for 4th grade students - "What is inside a Mobile Phone", 2000-2003.
- Leadership Council, Meetings Chair, RTP Software Process Improvement Network (an SEI organization), 2000-2002.
- Charter Teacher Trainer, Arkansas Science Crusade 1994-1995
- IEEE Computer Society, Membership Activities Board, Student Act. Comm., 1993 – 1995

Professional Activities - Publications

- IEEE Computer Society, Press Operations Committee, 2002 - 2009. Editor, Systems Series, 2004-2009.
- Contributing Editor, Arkansas Computer Bulletin, 1992 - 1993
- Associate Editor-in-Chief, *IEEE Computing Futures Magazine*, 1990-1991

Professional Activities - Conferences

- Technical Program Committee, 13th Communication and Networking Simulation Symposium (CNS'10), Orlando, FL, April 12-14, 2010.
- General Chair, IEEE SoutheastCon 2010, Charlotte, NC, March 18-21, 2010.
- Program Committee, Workshop on Computer Architecture Education, held in conjunction with the 42nd International Symposium on Micro Architecture, New York, NY, December 13, 2009.

- Co-Program Chair, MASCOTS 2009: 17th Annual Meeting of the IEEE/ACM International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems, September 21-23, 2009, South Kensington Campus, Imperial College London.
- Technical Program Committee, 12th Communication and Networking Simulation Symposium (CNS'09), Ottawa, ON, Canada, March 22-27, 2009.
- Program Committee, Workshop on Computer Architecture Education, held in conjunction with the 35rd International Symposium on Computer Architecture, Beijing, China, June 21, 2008.
- Program Chair, ASEE Annual Conference, Design in Engineering Education Division, Pittsburgh, PA, June 22 – 25, 2008.
- Technical Program Committee, 11th Communication and Networking Simulation Symposium (CNS'08), Ottawa, ON, Canada, April 14-17, 2008.
- Program Chair Elect, ASEE Annual Conference, Design in Engineering Education Division, Honolulu, HI, June 24 - 27, 2007.
- Program Committee, Workshop on Computer Architecture Education, held in conjunction with the 34rd International Symposium on Computer Architecture, San Diego, CA, June 3, 2007.
- Technical Program Committee, IEEE SoutheastCon 2007, Richmond, VA, March 22-25, 2007.
- Program Committee, 2nd IEEE International Workshop on Heterogeneous Multi-Hop Wireless and Mobile Networks, Vancouver, Canada, October 9-12, 2006.
- Track Chair, 2006 International Conference on Engineering Education, San Juan, PR, July 2006.
- Program Committee, Workshop on Computer Architecture Education, held in conjunction with the 33rd International Symposium on Computer Architecture, Boston, MA, June 17, 2006.
- Technical Committee, Track Co-chair, IEEE SoutheastCon 2006, Memphis, TN, March 30-April 2, 2006.
- Program Committee, 2nd IEEE International Conference on Mobile Ad-hoc and Sensor Systems, Washington, DC, November 7-11, 2005.
- Program Committee, IEEE International Workshop on Heterogeneous Multi-Hop Wireless and Mobile Networks, Washington, DC, November 6, 2005.
- Program Committee, Workshop on Computer Architecture Education, held in conjunction with the 32nd International Symposium on Computer Architecture, Madison, WI, June 6, 2005.
- Program Committee, International Workshop on Strategies for Energy Efficiency in Ad Hoc and Sensor Networks 2005 (IWSEEASN 2005) in conjunction with the 24th International Performance, Computing, and Communications Conference, Phoenix, Arizona, April 7-9, 2005.
- Program Committee, Workshop on Computer Architecture Education, held in conjunction with the 31st International Symposium on Computer Architecture, Munich, Germany, June 19, 2004
- Session Chair, Frontiers in Education Conference, 2003.
- Program Committee, Fourth International Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunications Systems, San Jose, 1996.
- Registration and Exhibits Chair, International Symposium on High-Performance Computer Architectures, 1995.
- Panel Moderator, Workshop on Computer Architecture Education, 1995.
- Steering Committee, Arkansas Computer Conference, 1995-1996
- Technical Program Chair, Arkansas Computer Conference, 1995
- Session Chair, International Conference on Parallel Processing, 1989

COMMUNITY SERVICE

Outreach

- Technical Mentor, Senior Graduation Project, Mecklenburg and Cabarrus County Schools, 2009-2010.
- Technical Mentor, Senior Graduation Project, Cabarrus County Schools, 2008-2009.

- Electronics Merit Badge, Boy Scout of America, Mecklenburg County Council, April 2008.
- "Robots and Robotics", UNC Charlotte Summer Camp: Science Fiction Writing, June 15, 2007.
- "Robots and Robotics", UNC Charlotte Summer Camp: Computer Assembly, June 11, 2007.
- Advisor/Mentor, UNC Charlotte Pre-College Research Experiences Program, Summer 2007.
- Career Day, Harris Middle School, January 30, 2007
- "Robots and Robotics", UNC Charlotte Summer Camp: Science Fiction Writing, August 2, 2006.
- Competition Organizer, Robotics, Science Olympiad, Charlotte, NC, March 11, 2006.
- High School NSBE visit to UNC Charlotte, November 11, 2005.
- "Robotics," The Fletcher School (K-12), Charlotte, NC, November 5, 2005.
- Advisor/Mentor, UNC Charlotte Pre-College Research Experiences Program (Students: Jennifer Townsend and Renee Baker), Summer 2005.
- Competition Organizer, Robotics, Science Olympiad, Charlotte, NC, March 12, 2005.
- Judge, Charlotte Mecklenburg Regional Science Fair, Charlotte, NC, February 19, 2005.
- Career Day, Harris Middle School, January 20, 2005
- Introduction to Electricity and Engineering, Cub Scout PowWow, Sanford, NC, November 13, 2004
- "The Value of the IEEE," UNC Charlotte Student Chapter, IEEE, September 9, 2004.
- Advisor/Mentor, UNC Charlotte Pre-College Research Experiences Program (Student: Robert Owens), Summer 2004.
- Competition Organizer, Robotics, Science Olympiad, Charlotte, NC, March 27, 2004.
- Judge, Poster Session, 2004 Junior Science & Humanities Symposium (JSHS), Charlotte, NC March 15, 2004.
- "The Value of the IEEE," UNC Charlotte Student Chapter, IEEE, February 5, 2004.
- Career Day, Harris Middle School, January 12, 2004

Media Contact

- Interviewed by WSOC-TV (Charlotte, NC) on a story on Consumer Product Safety, aired November 2, 2009.
- Quoted on the Senior Design Program, Charlotte Business Journal, January 16, 2009, "Engineering closer links".
- Subject of a story for Charlotte Observer, February 20, 2007, on using electronics toys for engineering education.
- Featured in "A day in the life" website of the UNC System, April 2006, found at: <http://unconfacultyassembly.northcarolina.edu/profiles/Conrad.htm>
- Served as expert of technical background to Gillian Wee, Charlotte Observer, January 8, 2005, "A niche market window: Charlotte circuit board maker embodies specialty firms' expertise, speed, grit."
- Subject of the cover story for Charlotte Observer, September 29, 2004, "Mecklenburg Neighbors" Section, on Stiquito and Education.
- Quoted in Durham Herald-Sun (Durham, NC), August 1, 2004 on Robotics and Artificial Intelligence.

RECENT CONSULTING ACTIVITIES

- Virtual Incubation Company, Technology Assessment, January 2010.
- Shaw Engineering/UNC Charlotte Continuing Education, Professional Education Assessment, July 2007 – January 2008.
- Emerson Electric Company, Embedded System Design Reviewer, Feb 2007 – December 2007.
- UNC Charlotte Continuing Education, Project Management Instructor, July 2006 – January 2008 (for the general population, Duke Energy, General Dynamics, and Balfour Beatty Construction).
- Admark Graphics Systems, Process Improvement, June-July 2006.

- Womble Carlyle Sandridge & Rice, Expert Witness for a patent infringement case of a consumer product. Case pending, July 2005 – January 2007.
- Nekton Research (now iRobot Marine Division)– Process Improvement, Documentation Tracking, and Software Development, May – December 2005.
- Frontline Test Equipment – Process Improvement, Documentation Tracking, and Software Development, June 2004.
- Intellectual Capital Management Group, Inc. (ICMG) – Wireless Technology Patent Review (Case 1730), January 2004.

PUBLICATIONS AND RESEARCH

LIST OF PUBLICATIONS

Dissertation

James M. Conrad, "Parallel Arc Consistency Algorithms for Pre-processing Constraint Satisfaction Problems," Ph.D. Dissertation, Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, April 1992. Advisor: Dharma P. Agrawal.

Books

1. **James M. Conrad**, *Stiquito(tm) Controlled!*, ISBN 0-4714-8882-8, 191 pages, Wiley Books and IEEE Computer Society Press: Los Alamitos, CA, 2005. Responsible for organization, discussions with the publisher, and all chapters.
<http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471488828.html>
2. **James M. Conrad** and Jonathan W. Mills, *Stiquito(tm) for Beginners: An Introduction to Robotics*, ISBN 0-8186-7514-4, 192 pages, Wiley Books and IEEE Computer Society Press: Los Alamitos, CA, 1999. Responsible for organization, discussions with the publisher, and twelve of the fourteen chapters. <http://www.wiley.com/WileyCDA/WileyTitle/productCd-0818675144.html>
3. **James M. Conrad** and Jonathan W. Mills, *Stiquito(tm): Advanced Experiments with a Simple and Inexpensive Robot*, ISBN 0-8186-7408-3, 328 pages, Wiley Books and IEEE Computer Society Press: Los Alamitos, CA, 1997. Responsible for organization, discussions with the publisher, and coordinating contributing author chapters. Author of eight of the twenty-one chapters.
<http://www.wiley.com/WileyCDA/WileyTitle/productCd-0818674083.html>

Book Chapters

1. **James M. Conrad** and Jonathan W. Mills, "The History and Future of Stiquito, a Hexapod Insectoid Robot," in *Artificial Life Models in Hardware*, Andy Adamatzky, Editor, Springer: London, 2009.
2. David A. Andrews, Mitch A. Thornton, **James M. Conrad**, and Michael D. Glover, "Computer-Aided Engineering and Design," in *Advanced Electronic Packaging: With Emphasis On Multi-Chip Modules*, editor William D. Brown, IEEE Press: New York, NY, 1999.

Refereed Journal Articles

1. Ivan Howitt, Wayne Manges, Teja Kuruganti, Glenn Allgood, Jose Gutierrez, **James M. Conrad**, "Wireless Industrial Sensor Networks: Framework for QoS Assessment and QoS Management," *Transactions of the Instrumentation, Systems, and Automation Society (ISA)*, pp. 347-359, vol. 45, no. 3, July 2006.
2. **James M. Conrad** and Ivan Howitt, "Introducing Students to Communications Concepts Using Optical and Low-Power Wireless Devices," invited paper to the journal *Elektrik: Special Issue on Electrical and Computer Engineering Education in the 21st Century: Issues, Perspectives and Challenges*, pp. 55-66, vol. 14, no. 1, March 2006.
3. **James M. Conrad**, "Stiquito for Robotics and Embedded Systems Education," *IEEE Computer Magazine*, vol. 38, no. 6, pp. 77-81, June 2005.
4. **James M. Conrad** and Dharma P. Agrawal, "Asynchronous Parallel Arc Consistency Algorithms on a Distributed Memory Machine," *Journal of Parallel and Distributed Computing*, Vol. 24, No. 1, pp. 27-40, January 1995.

5. **James M. Conrad** and Dharma P. Agrawal, "Simulation of Generic Multiprocessor Configurations for Asynchronous Algorithms," *International Journal in Computer Simulation, Special Issue on Multiprocessor Networks*, Vol. 3, No. 2, pp. 147-164, 1993.

Refereed Conference Articles

1. Adam Harris and **James M. Conrad**, "Hybrid Control of a Simple Walking Autonomous Robot," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
2. Kristen Reband, Melinda Dees, and **James M. Conrad**, "Robot Muscles in a Subzero Temperature Environment," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
3. Sami M. Lasassmeh and **James M. Conrad**, "Time Synchronization in Wireless Sensor Networks: A Survey," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
4. Suraj G. Swami, Onkar N. Raut, Ipsita Acharya, and **James M. Conrad**, "A Wireless Quiz System using Low Power Microcontrollers," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
5. Kailash Toshniwal and **James M. Conrad**, "A Web-based Sensor Monitoring System on a Linux-based Single Board Computer Platform," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
6. Richard A. McKinney, Malcolm J. Zapata, **James M. Conrad**, Thomas W. Meiswinkel, Siddharth Ahuja, "Components of an Autonomous All-terrain Vehicle (ATV)," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
7. Rohit Kale, Nripendra Singh, Hadi Alasti, Asis Nasipuri, Robert Cox, **James M. Conrad**, Luke Van der Zel, Bienvenido Rodriguez, Ralph McKosky, and Joseph Graziano, "Design and Implementation of a Wireless Node for Advanced Sensor Processing and Network Integration," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
8. Asis Nasipuri, Hadi Alasti, Priya Harihara Puthran,, Robert Cox, **James M. Conrad**, Luke Van der Zel, Bienvenido Rodriguez, Ralph McKosky, and Joseph Graziano, "Vibration Sensing for Equipment's Health Monitoring in Power Substations Using Wireless Sensors," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
9. Zhe Dang, Ivan Howitt, Richard A. McKinney, **James M. Conrad**, "First and Second Order Statistics Analysis for the RSS Measurement in an Indoor Environment," *Proceedings of the 2010 IEEE SoutheastCon*, Charlotte, NC, March 2010 (to appear).
10. Andrew Willis, Malcolm Zapata and **James M. Conrad**, "Linear Methods for Calibrating LIDAR-and-Camera Systems," *Proceedings of 17th Annual Meeting of the IEEE/ACM International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems*, Kensington, London, UK, pp. 577-579, September 2009.
11. Sharayu Ghangrekar and **James M. Conrad**, "Modeling and Simulating a Path Planning and Obstacle Avoidance Algorithm for an Autonomous Robotic Vehicle," *Proceedings of 17th Annual Meeting of the IEEE/ACM International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems*, Kensington, London, UK, pp. 580-582, September 2009.
12. **James M. Conrad**, Nabila BouSaba, Daniel Hoch, William Heybruck, Peter Schmidt, and Deborah Sharer, "Assessing Senior Design Project Deliverables," *Proceedings of the 2009 ASEE Conference*, Austin, TX, June 2009.

13. Peter Schmidt, **James M. Conrad**, Daniel Hoch, William Heybruck, Martin Kane, Deborah Sharer, and Linda Thurman, "Student Evaluations of Sponsor Interaction in a Capstone Interdisciplinary Senior Design Program," *Proceedings of the 2009 ASEE Conference*, Austin, TX, June 2009.
14. G. Bruce Gehrig, Lyndon Abrams, Deborah Bosley, **James M. Conrad**, and Stephen Kuyath, "The TECT Workshop: Raising High School Teachers and Guidance Counselor Self-Efficacy in Counseling Students about Engineering Careers and Majors," *Proceedings of the 2009 ASEE Conference*, Austin, TX, June 2009.
15. Jesse Bikman, Thomas Meiswinkel, and **James M. Conrad**, "An Implementation of a Color Following System using the CMUcam3," *Proceedings of the 2009 IEEE SoutheastCon*, Atlanta, GA, pp. 30-33, March 2009.
16. **James M. Conrad**, Daniel Hoch, William Heybruck, Peter Schmidt, Martin Kane, Linda Thurman, and Frank Skinner, "Working with Industry Sponsors in a Multidisciplinary Senior Design Program," *Proceedings of the 2008 ASEE Conference*, Pittsburgh, PA, June 2008.
17. Andrew Willis and **James M. Conrad**, "Senior Design Project: A Robotic System Using Stereoscopic Cameras for Navigation," *Proceedings of the 2008 ASEE Conference*, Pittsburgh, PA, June 2008.
18. Andrew Willis and **James M. Conrad**, "Design of Intelligent Spacecraft: An Interdisciplinary Engineering Education Course," *Proceedings of the 2008 ASEE Conference*, Pittsburgh, PA, June 2008.
19. Malcolm J. Zapata, William J. Haynes, Nicholas Kannen, Megan Sullivan, and **James M. Conrad**, "An Autonomous Vehicle for Space Exploration," *Proceedings of the 2008 IEEE SoutheastCon*, Huntsville, AL, pp. 15-20, April 2008.
20. Jerry J. Zacharias, Malcolm Zapata, and **James M. Conrad**, "Environment Monitoring with Sensors for Autonomous Vehicles," *Proceedings of the 2008 IEEE SoutheastCon*, Huntsville, AL, pp. 21-26, April 2008.
21. Gajendra Singh and **James M. Conrad**, "Easy-to-Use Communication Interfaces for Data Acquisition," *Proceedings of the 2008 IEEE SoutheastCon*, Huntsville, AL, pp. 111-116, April 2008.
22. Sravanthi Chalasani and **James M. Conrad**, "A Survey of Energy Harvesting Sources," *Proceedings of the 2008 IEEE SoutheastCon*, Huntsville, AL, pp. 442-447, April 2008.
23. **James M. Conrad**, Daniel Hoch, and Frank Skinner, "Student Deliverables and Instruction for a Senior Design Program Course," *Proceedings of the 2007 ASEE Conference*, Honolulu, HI, June 2007.
24. Yesim Sireli, **James M. Conrad**, Martin Kane, and Frank Skinner "Contribution of Engineering Management and Systems Engineering Concepts to Engineering Design," *Proceedings of the 2007 ASEE Conference*, Honolulu, HI, June 2007.
25. Bruce Gehrig, Lyndon Abrams, Deborah Bosley, **James M. Conrad**, and Steven Kuyath, "Addressing the Demand for Engineers by Teaching Engineering to Counselors and Teachers," *Proceedings of the 2007 IEEE Meeting the Growing Demand for Engineers and Their Educators 2010-2020 International Summit*, Munich, Germany, November 2007.
26. Bruce Gehrig, Lyndon Abrams, Deborah Bosley, **James M. Conrad**, and Steven Kuyath, "Expanding Engineering Diversity by Teaching Engineering to Counselors and Teachers," *Proceedings of the 2007 ASEE Conference*, Honolulu, HI, June 2007.
27. Sonia Thakur and **James M. Conrad**, "An Embedded Linux Platform to Collect, Analyze and Store Critical Data for the Navigation of an Autonomous Vehicle," *Proceedings of the 2007 IEEE SoutheastCon*, Richmond, VA, pp. 237-242, March 2007.

28. Brian Newberry and **James M. Conrad**, "Data Logging Solution for Digital Signal Processors," *Proceedings of the 2007 IEEE SoutheastCon*, Richmond, VA, pp. 247-252, March 2007.
29. Jerry Zacharias and **James M. Conrad**, "A Survey of Digital Signal Processing Education," *Proceedings of the 2007 IEEE SoutheastCon*, Richmond, VA, pp. 322-327, March 2007.
30. Venkat Dronamraju, Gurunath Athalye and **James M. Conrad**, "A Stepper Motor and Serial Communication Interface Daughter Board for Educational Use," *Proceedings of the 2007 IEEE SoutheastCon*, Richmond, VA, pp. 328-332, March 2007.
31. Chaitanya Misal and **James M. Conrad**, "Designing a pH Data Acquisition and Logging Device using an Inexpensive Microcontroller," *Proceedings of the 2007 IEEE SoutheastCon*, Richmond, VA, pp. 217-220, March 2007.
32. **James M. Conrad** and Ivan Howitt, "Introducing Project Management Skills to Students Conducting Research," *Proceedings of the 2006 International Conference on Engineering Education*, San Juan, PR, pp. T4D-21 to 25, July 2006.
33. Ishfan Vakil and **James M. Conrad**, "Embedded Systems Communication Board for Education and Research," *Proceedings of the 2006 International Conference on Engineering Education*, San Juan, PR, pp. T3G-25 to 29, July 2006.
34. **James M. Conrad**, "Determining How to Teach Project Management Concepts to Engineers," *Proceedings of the 2006 ASEE Conference*, Chicago, IL, June 2006.
35. Ishfan Vakil and **James M. Conrad**, "Design of a Data Communications Hub for use in Research and Education," *Proceedings of the 2006 IEEE SoutheastCon*, Memphis, TN, pp. 98-103, March 2006.
36. Gurudat Mysore, Brian Newberry and **James M. Conrad**, "A Microcontroller-Based Bed-of-Nails Test Fixture to Program and Test Small Printed Circuit Boards," *Proceedings of the 2006 IEEE SoutheastCon*, Memphis, TN, pp. 104-107, March 2006.
37. Ivan Howitt, Rogelio Neto, Jing Wang, and **James M. Conrad**, "Extended Energy Model for the Low Rate WPAN," *Proceedings of the 2nd IEEE International Conference on Mobile Ad-Hoc and Sensor Systems*, Washington DC, pp. 315-322, November 2005.
38. **James M. Conrad** and Yesim Sireli, "Learning Project Management Skills in Senior Design Courses," *Proceedings of the 2005 Frontiers in Education Conference*, Indianapolis, IN, pp. F4D-1 to 6, October 2005.
39. **James M. Conrad**, Sami Lasassmeh, Ishvan Vakil, and Benjamin Levine, "Teaching Optical Communications Concepts in Embedded Systems Courses," *Proceedings of the 2005 Frontiers in Education Conference*, Indianapolis, IN, pp. T4C-28 to 33, October 2005.
40. Andrew McClain and **James M. Conrad**, "Software Design of the Stiquito Micro Robot," *Proceedings of the 2005 IEEE SoutheastCon*, Ft. Lauderdale, FL, pp. 143-147, April 2005.
41. Gajendra Singh and **James M. Conrad**, "Introducing Students to Ultrasonics and its Application in Robotics," *Proceedings of the 2005 IEEE SoutheastCon*, Ft. Lauderdale, FL, p.687, April 2005. (Abstract only)
42. **James M. Conrad**, "Introducing Students to the Concept of Embedded Systems," *Proceedings of the 2004 International Conference on Engineering Education*, Gainesville, FL, October 2004.
43. **James M. Conrad** and Ivan Howitt, "Software and Hardware Tools for Teaching Communications Concepts and Introducing Students to Low-Power Wireless Communications," *Proceedings of the 2004 International Conference on Engineering Education*, Gainesville, FL, October 2004.

44. **James M. Conrad**, Deborah Plummer, Jan Bailey, Mike Williams, Richard Thayer and Ted Lewis, "Authoring A Professional Book," *Proceedings of the 2003 Frontiers in Education Conference*, Boulder, CO, p. F1G-1, November 2003.
45. **James M. Conrad**, "A Hands-On Approach For K-12: Getting Industry Involved," *Proceedings of the 2002 Frontiers in Education Conference*, Boston, MA, pp. F2C-1 to 4, November 2002.
46. **James M. Conrad** "Stuffing More Learning into the Computer Engineering Curriculum Bag: Capstone Course Preparation," *Proceedings of the 2002 Frontiers in Education Conference*, Boston, MA, pp. F3D-20 to 23, November 2002.
47. **James M. Conrad** and Santosh Kolenchery, "Wireless Phones, GPS and Data Applications" *Proceedings of the 6th International Conference On Information Systems Analysis And Synthesis (ISAS 2000)*, Orlando, FL, Vol. VII, pp. 74-79, July 2000.
48. **James M. Conrad**, Mark Baldwin, Sean Curran, and Larry Martin, "Using a New Software Product Development Process for a Code Reuse Project," *Proceedings of the 1999 Engineering of Computer-Based Systems Conference*, Nashville, TN, pp. 34-40, March 1999.
49. **James M. Conrad** and James J. Brickley, "Using Stiquito in an Introduction to Engineering Skills and Design Course," *Proceedings of the 1997 Frontiers in Education Conference*, Pittsburgh, PA, pp. 1212-1214, November 1997.
50. Xuyang Li, Azhar Maqsood, and **James M. Conrad**, "Parallel Implementations of Direct Solvers for Sparse Systems of Linear Equations on a PVM System and a nCUBE Machine," *Proceedings of the 1996 Arkansas Computer Conference*, Sercy, AR, pp. 52-63, March 1996.
51. **James M. Conrad** and Venkateswara R. Chitturi, "Success of an Institute on Engineering and Technology Institute for Secondary School Teachers," *Proceedings of the 1995 Frontiers in Education Conference*, Atlanta, GA, pp. 4d5.2-6, November 1995.
52. **James M. Conrad** "Learning Computer Hardware Design Using Computer Aided Design Tools," *Proceedings of the 1995 Frontiers in Education Conference*, Atlanta, GA, pp. 4d2.9-12, November 1995.
53. **James M. Conrad** "Architecture-Specific Algorithms for a Parallel Programming Course," *Proceedings of the International Conference on Parallel Processing Workshop*, August 1995.
54. Arthur Hennessey and **James M. Conrad**, "Parallel Solutions to Geographic Information Systems Applications," *Proceedings of the Arkansas Computer Conference*, Conway, AR, pp. 15-19, March 1995.
55. Kolluru Srinivas and **James M. Conrad** "A Parallel Forward-Checking Algorithm for Distributed Memory Multicomputers," *Proceedings of the Arkansas Computer Conference*, Conway, AR, pp. 62-66, March 1995.
56. **James M. Conrad** and Luke M. Hassell, "A Senior-Level Computer Hardware Organization Course: Designing a Single Board Computer," *Proceedings of the Workshop on Computer Architecture Education*, Raleigh, NC, January 1995. Also published in *IEEE Computer Society Technical Committee on Computer Architecture Newsletter*, pp. 21-27, Spring 1995.
57. **James M. Conrad**, "Introduction to Engineering Concepts for Middle, Junior High, and High School Teachers," *Proceedings of the 1994 Frontiers in Education Conference, Educating Engineers For World Competition*, San Jose, CA, pp. 250-252, November 1994.
58. Susan A. Mengel and **James M. Conrad**, "Motorola 68000 Family Simulators in Education," *Proceedings of the 1994 Frontiers in Education Conference, Educating Engineers For World Competition*, San Jose, CA, pp. 106-110, November 1994.

59. **James M. Conrad** and Jonathan W. Mills, "Inexpensive Technology Lab Exercises for Grades 6-9," *Proceedings of the 1994 Frontiers in Education Conference, Educating Engineers For World Competition*, San Jose, CA, pp. 218-222, November 1994.
60. **James M. Conrad**, "A Computer Hardware Organization Course with an FPGA Lab Exercise," *Proceedings of the Workshop on Designing Microelectronic Systems Using FPGAs*, San Jose, CA, November 1994.
61. **James M. Conrad** and Jerry Mathew, "A Backjumping Search Algorithm for a Distributed Memory Multicomputer," *Proceedings of the 23rd International Conference on Parallel Processing*, St. Charles, IL, pp. 243-246, August 1994.
62. Kenneth L. Rusnok, Martin S. Lavine, and **James M. Conrad**, "Freedom '93: A Portable Speech Device," *Proceedings of the 1994 Symposium on Applied Computing*, Phoenix, AZ, pp. 556-560, March 1994.
63. **James M. Conrad**, David L. Andrews, Darlene Butler, William Casady, Maria Coleman, and Matthew Gordon, "Introduction to Engineering Concepts for High School Teachers and Students," *Proceedings of the 1993 Frontiers in Education Conference, Engineering Education: Renewing America's Technology*, Washington D.C., pp. 688-693, November 1993.
64. David L. Andrews, **James M. Conrad**, Leonard Schaper, Susan A. Mengel, and Daniel J. Berleant, "Design of a High Speed MIMD Distributed Processor Node Using MCM Technology," *Proceedings of the 1993 International Electronics Packaging Conference*, San Diego, CA, pp. 132-139, September 1993.
65. Jerry Mathew, **James M. Conrad**, and Daniel J. Berleant, "Word Sense Disambiguation by Constraint Satisfaction - A Feasibility Study," *Proceedings of the Arkansas Computer Conference*, Little Rock, AR, pp. 74-79, October 1993.
66. **James M. Conrad**, "Parallel Arc Consistency Algorithms for Pre-processing Constraint Satisfaction Problems," *SIGART Bulletin*, Vol. 4, No. 1, page 39, January 1993.
67. **James M. Conrad** and Dharma P. Agrawal, "A Graph Partitioning-based Load Balancing Strategy for a Distributed Memory Machine," *Proceedings of the 21st International Conference on Parallel Processing*, St. Charles, IL, Vol. II, pp. 74-81, August 1992.
68. **James M. Conrad** and Dharma P. Agrawal, "Distributed, Scaleable, and Static Parallel Arc Consistency Algorithms on Private Memory Machines," *Proceedings of the 12th International Conference on Distributed Computing Systems*, Yokohama, Japan, pp. 442-449, June 1992.
69. Michael Teague, **James M. Conrad**, and Dharma P. Agrawal, "An Innovative Model of Generic Multiprocessors Using a Simulator," *Proceedings of the Pittsburgh Conference on Simulation and Modeling*, Pittsburgh, PA, Part 3, May 1992.
70. **James M. Conrad**, Dharma P. Agrawal, and Dennis R. Bahler, "Scaleable Static Parallel Arc Consistency Algorithms for Shared Memory Computers," *Proceedings of the Sixth International Parallel Processing Symposium*, Beverly Hills, CA, pp. 242-249, March 1992.
71. **James M. Conrad**, Dennis R. Bahler and James A. Bowen, "Static Parallel Arc Consistency in Constraint Satisfaction," *Proceedings of the 1991 International Symposium on Methodologies for Intelligent Systems*, Charlotte, NC, pp. 500-509, October 1991.
72. **James M. Conrad** and Dharma P. Agrawal, "Performance of an Asynchronous Parallel Algorithm on a Generic Multiprocessor Simulator," *Proceedings of the Pittsburgh Conference on Simulation and Modeling*, Pittsburgh, PA, pp. 1290-1297, May 1991.

Magazine Articles

1. **James M. Conrad**, "How a Project Office Can Improve an Engineering Company's PM Skills Base," Chief Project Officer (<http://www.chiefprojectofficer.com>), July 2005.
2. Scott Vu and **James M. Conrad**, "Racebot: A Two-Degree-of-Freedom Stiquito Robot," *Circuit Cellar Ink*, pp. 48-53, Issue 141, April 2002
3. **James M. Conrad** and Serge Caron, "A Simple Circuit to Make Stiquito Walk on Its Own Effectively," *Robot Science and Technology Magazine*, pp.14-19, Issue 8, Feb./Mar. 2001.
4. **James M. Conrad** and Mark van Dijk, "BeamStiquito," *Circuit Cellar Ink*, pp. 10-12, Issue 120, July 2000.
5. **James M. Conrad** and Jonathan W. Mills, "A PC-Based Controller for the Stiquito Robot," *Circuit Cellar Ink*, pp. 18-22, Issue 108, July 1999.
6. **James M. Conrad** and Wayne Brown, "Building an Inexpensive Insectoid Robot: Propulsion using Nitinol Wire," *Robot Science and Technology Magazine*, pp. 12-19, January 1999.

Papers Submitted

1. **James M. Conrad**, "NASA Senior Design: Systems Engineering and Reusable Avionics," *Proceedings of the 2010 ASEE Conference*, Louisville, KY, June 2010.
2. Jiang Guo, Jose M. Macias, and **James M. Conrad**, "NASA Senior Design: Mission Assurance Management Environment," *Proceedings of the 2010 ASEE Conference*, Louisville, KY, June 2010.
3. Benjamin Levine, Ivan Howitt, and **James M. Conrad**, "Embedded Wireless Networks Laboratory Instruction," *Proceedings of the 2010 ASEE Conference*, Louisville, KY, June 2010.
4. Nabila BouSaba, **James M. Conrad**, G. Bruce Gehrig, Daniel Hoch, William Heybruck, Martin Kane, Peter Schmidt, and Deborah Sharer, "Successes of an Early Conceptual Design Presentation for Senior Design Projects," *Proceedings of the 2010 ASEE Conference*, Louisville, KY, June 2010.
5. Deborah Sharer, Nabila BouSaba, **James M. Conrad**, G. Bruce Gehrig, Daniel Hoch, William Heybruck, Martin Kane, and Peter Schmidt, "Implementation of a Capstone Senior Design Program Using Open Source Course Management Software," *Proceedings of the 2010 ASEE Conference*, Louisville, KY, June 2010.
6. Peter Schmidt, Nabila BouSaba, **James M. Conrad**, G. Bruce Gehrig, Daniel Hoch, William Heybruck, Martin Kane, and Deborah Sharer, "A Simplified Documentation Control System for use with a Capstone Senior Design Program," *Proceedings of the 2010 ASEE Conference*, Louisville, KY, June 2010.

Poster Presentations

Sixteen posters presented.

Technical Reports and Department Aids

Twelve University of Arkansas Technical Reports published.

Presentations and Panels

Over forty external presentations or panel presentations made since 1994. These do not include conference paper presentations.

Papers in Preparation

1. G. Bruce Gehrig, Lyndon Abrams, Deborah Bosley, **James M. Conrad**, and Stephen Kuyath, "Teaching Engineering to Counselors and Teachers to Reach Prospective Engineering Students."
2. **James M. Conrad**, "*Extreme Project Management Techniques for the IT and Product Research Fields*," an invited paper in preparation for the *Software Quality Professional Journal*.
3. **James M. Conrad** and Ivan Howitt, "Project Management of an Industry Development Effort in a University Setting", in preparation for the *IEEE Transaction on Business Management*.

Inventions

- US Patent D591,186, Biometric Fingerprint Recognition Home Security System Alarm Panel, issued April 28, 2009.
- Robotic Microprocessor Board, Copyright 2004
- Analog Controller Board, Copyright 1999.
- PC Parallel Port Controller Board, Copyright 1999.
- Single-piece plastic molded Stiquito Body, Copyright 1997.
- Single-piece plastic molded Stiquito Controller, Copyright 1997.

GRANTS AND DONATIONS

Total Grant Activity: \$1,600,606 (\$920,816 at UNC Charlotte)

Principal Investigator – Research

(Total \$457,737, \$202,674 at UNC Charlotte)

1. PI: An Autonomous Robotic Vehicle for Towing a Sensor Array, Zapata Engineering, \$64,899, March 2008 – September 2009.
2. A Survey of Power Scavenging and Harvesting, Rosemount Aerospace Corporation, \$10,335, February – June 2006.
3. Embedded System Planning, Characterization and Development, Nekton Research (now iRobot Marine Division), \$16,456, August 2005 - August 2006.
4. A Digital Doppler Demodulator for use in Mobile Robotics Applications, Nekton Research (now iRobot Marine Division), \$10,149, August 2005 – December 2005.
5. Micro Robots for Sub-Zero Degree Space Exploration, North Carolina Space Grant Consortium, \$2,000, UNC Charlotte Match \$2,000, August 2005 – December 2006.
6. Water Quality Sensing using Embedded Systems, Nekton Research (now iRobot Marine Division), \$30,617, July 2005 - December 2005.
7. Embedded System Characterization and Development, Nekton Research (now iRobot Marine Division), \$44,363, May 2005 - August 2005.
8. Introducing Optical Device and Communications Topics into the UNC Charlotte ECE Embedded Systems Courses, Charlotte Research Institute and UNC Charlotte Optics Center, \$6,000, August 2005 – January 2006.
9. Communication Protocol Decoder Development, Frontline Test Equipment, \$6,432, September 2004 – May 2005.
10. Test Specification and Test Case Development of Communication Protocols, Frontline Test Equipment, \$38,872, May 2004 – August 2004.
11. A Low-Power Embedded Systems and Communications Test Bed, UNC Charlotte Faculty Research, \$5,000, January 2004-December 2004.

12. Cooperative and Mobile Autonomous Robots, Arkansas Space Grant, \$15,000, University of Arkansas Match \$15,724, University of the Ozarks Match \$6,020, Motorola Match \$700, May 1995 - March 1996.
13. Introduction to Engineering Concepts for Middle, Junior High, and High School Teachers: Expanding the Preparation Workshop, Arkansas Department of Higher Education Promotional Grant, \$20,768, Arkansas Department of Education, \$5,000, AT&T Foundation, \$25,000, Acxiom Foundation \$5,000, University of Arkansas match, \$21,893, June 1995 - May 1996.
14. Parallel Constraint Satisfaction Algorithms for Multichip Module Design, Arkansas Science and Technology Authority, \$36,946 University of Arkansas match \$24,776, Oct. 1994 - Sept. 1995.
15. Introduction to Engineering Concepts for Middle, Junior High, and High School Teachers: Preparation Workshop, Arkansas Department of Higher Education Promotional Grant, \$38,000, Trinity Foundation of Arkansas, \$5,000, University of Arkansas match, \$35,236, July 1994 - July 1995.

Principal Investigator – Education and Equipment

(Total \$38,389, \$25,639 at UNC Charlotte)

1. A NASA Johnson Space Center Avionics Senior Design Project, NASA Exploration Systems Mission Directorate/Space Grant, \$29,000, May 2009 - June 2010.
2. An Integrated Course in Embedded Systems and Wireless Networks, UNC Charlotte Curriculum and Instruction Development, \$10,200, ECE Department match \$1,500, May 2006-May 2007.
3. Equipment Donation: Xilinx FPGA Boards for ECGR 2181 Logic Design, Xilinx, Inc., \$1,683, November 2005.
4. Equipment Donation: Xilinx FPGA Boards for ECGR 2181 Logic Design, Xilinx, Inc., \$1,584, February 2005.
5. Equipment Donation: A Low Cost, High Quality Array DFT Test Method, Intel, Inc., \$9,672, December 2004.
6. Web site Development and Maintenance for 2005, IEEE Charlotte Chapter, \$1,000, January – December 2005.
7. Distance Learning Course Development, North Carolina State University, \$4,000, Summer-Fall 1999.
8. Teaching Enhancement Grant, University of Arkansas Teaching and Faculty Support Center, \$2,000, January 1995 - May 1995 (developed teaching portfolio).
9. Engineering College Teaching Innovation Grant: Mobile Robots, University of Arkansas, College of Engineering, \$6,750, August 1994 - May 1995.

Co-Principal Investigator – Research

(Total \$957,032, \$655,623 at UNCC)

1. Scalability and Sustainability Issues of Wireless Mesh Sensor Network for Substation Monitoring, Electrical Power Research Institute (EPRI), \$51,666, September 2008 – July 2009.
2. Extension: Wireless Mesh Sensor Network for Fossil Plant Monitoring, Electrical Power Research Institute (EPRI), \$16,779, February 2008 – December 2008.
3. Wireless Mesh Sensor Network for Fossil Plant Monitoring, Electrical Power Research Institute (EPRI), \$40,000, February 2008 – December 2008.
4. Extension: Wireless Mesh Sensor Network for Power Plant Monitoring, Electrical Power Research Institute (EPRI), \$40,481, February 2008 – November 2008.
5. Extension: Wireless Mesh Sensor Network for Power Plant Monitoring, Electrical Power Research Institute (EPRI), \$54,083, September 2007 – December 2007.
6. Wireless Mesh Sensor Network for Power Plant Monitoring, Electrical Power Research Institute (EPRI), \$83,566, September 2006 – August 2007.

7. TECT: Teaching Engineering to Counselors and Teachers, NSF, \$300,000, May 2006 – May 2009.
8. Computer Architectures for Multichip Modules: Short Range Plans, College of Engineering, \$301,409, Jan. 1993 - August 1994, Funded by the Univ. of Arkansas College of Engineering, Arkansas High-Density Electronics Center, IDT, and Motorola.

Co-Principal Investigator – Education and Equipment

(Total \$147,448, \$36,880 at UNCC)

1. Equipment Donation: Wireless Personal Area Network Boards and Software, \$36,880, Eaton Corporation, July 2005.
2. Science Crusade: Higher Order Thinking in Science, Arkansas Department of Higher Education \$42,956, University of Arkansas match \$9,590, January 1996 - December 1996.
3. Science Crusade: Higher Order Thinking in Science, Arkansas Department of Higher Education \$50,856, University of Arkansas match \$7,166, January 1995 - December 1995.

Donations

(Total \$206,142, \$206,142 at UNCC)

- Donations from AREVA, Defense Technologies, Eaton, EPRI, Parsons, Stabilis, Shaw, Timken, Charlotte Research Institute and others to support the UNC Charlotte College of Engineering Senior Design Program, approximately \$118,000, Fall 2007/Spring 2008.
- Donations from EPRI, Hargraves Fluidics, Irwin Tools, Lowes Hardware, IBM, Charlotte Research Institute and others to support the UNC Charlotte College of Engineering Senior Design Program, approximately \$70,000, Fall 2006/Spring 2007.
- Received \$6,542 in donations of embedded systems boards, parts, and software from ten companies for use in education and research (2003 to present).
- Secured \$11,600 in donations for UNCC Student Chapter of IEEE (2003 to present).

STUDENT ADVISING OF RESEARCH

PhD Dissertations (at UNC Charlotte unless noted)

1. Richard McKinney, Ph.D. EE – TBD.
2. Sami M. Lasassmeh, Ph.D. EE – *Clock Synchronization for Wireless Sensor Networks* – 12/2010.

Masters Thesis's (at UNC Charlotte unless noted)

1. Steve Erdmanczyk, MSEE – 5/2011.
2. Onkar Raut, MSEE – 5/2011.
3. Suraj Swami, MSEE - 5/2011.
4. Sunil Kumar Gurram, MSEE - 5/2011.
5. Benjamin Levine, MSEE – *Embedded Wireless Sensors and Networks* – 8/2010.
6. Adam Harris, MSEE – 8/2010.
7. Jerry Zacharias, MSEE – 8/2010.
8. Vivek Srikantan, MSEE – 5/2010.
9. Siddharth Ahuja, MSEE – *System Design and Software Architecture of a Differential Global Positioning System for an Autonomous All-Terrain-Vehicle* – 8/2009.
10. Sharayu Ghangrekar, MSEE – *A Path Planning and Obstacle Avoidance Algorithm for an Autonomous Robotic Vehicle* – 4/2009.
11. Chaitanya Misal, MSEE – *Analysis of Power Consumption of an End Device in a ZigBee Mesh Network* – 12/2007.
12. Nick Wieder, MSEE – *System-on-programmable-chip Design using a Unified Development Environment* – 5/2007.

13. Sonia Thakur, MSEE – *Embedded Linux Platform to Collect, Analyze and Control Flow of Sensor Networks* – 12/2006.
14. Sandeep Sirpatil, MSEE – *Implementation of an IEEE 802.15.4 Protocol Stack for Linux* - 11/2006.
15. Ishfan Wakil, MSEE – *Using Optical Communications with Embedded Systems* - 11/2006.
16. Gajendra Singh, MSEE – *Development of Multithreaded Real-time Data Acquisition Solutions* - 8/2006.
17. Rajan Rai, MSEE – *IEEE 802.15.4 Protocol Implementation and Measurement of Current Consumption* – 4/2006.
18. Assad Ansari, MSEE - *Hardware Development of an Embedded Wireless Evaluation Board* - 11/2005.
19. Murari Raghavan, MSEE – *Testing of a New Wireless Embedded Board*, 11/2005.
20. Binada Ramachandran, MSCSE – *Parallel Lookahead Procedures with Respect to Constraint Satisfaction Problems* – 12/1995 (Arkansas).
21. Krishnamurthy Ramalingham, MSCSE – *Comparative Study of the NQueens Problem Using Multiple Parallel Architectures* - 10/1995 (Arkansas).
22. Jerry Mathew, MSCSE – *Parallel Search Algorithms for Solving Constraint Satisfaction Problems* – 12/1993 (Arkansas).

Masters Projects (at UNC Charlotte unless noted)

23. Suganya Jebasingh, MSEE - 12/2010.
24. Aswin Ramakrishnan, MSEE - 12/2010.
25. Vasanthsekar Shekar, MSEE - 12/2010.
26. Balasubramaniya Chandrasekaran, MSEE – 5/2010.
27. Thomas Meiswinkel, MSEE – 5/2010.
28. Amit Kumar, MSEE – *An Embedded and Wireless System: Restaurant Paging Device* – 12/2009.
29. Malcolm Zapata, MSEE – *Autonomous ATV controls and obstacle avoidance* – 12/2009.
30. Kailash Toshniwal, MSEE – *Interrupt based web interfaced embedded monitoring over wireless intra-net in Linux for autonomous ATV* – 12/2009.
31. Richard McKinney - MSEE - *Components of an Autonomous ATV (Robotics and Embedded Systems)* – 5/2009.
32. Anagha Basole, MSEE – *Wireless Communication between Autonomous Vehicles* – 12/2008.
33. Shrenik Mehta, MSEE – *Line Extraction using LIDAR* – 12/2008.
34. Praneeth Bajjuri, MSEE – *Communications using ZigBee Modules* – 12/2007.
35. Santosh Ramani, MSEE – *Developing Applications using ZigBee Modules* – 12/2007.
36. Ashwin Subramanian, MSEE – *Developing Applications using ZigBee Modules* – 12/2007.
37. Sravanthi Chalasani, MSEE – *Performance Analysis of an RTOS* – 12/2007.
38. Chitti Srilekha, MSEE – *Performance Analysis of an RTOS* - 8/2007.
39. Gurunath Athalye, MSEE – *Educational Board for Stepper Motor Interface* - 8/2007.
40. Priyanka Krishna, MSEE – *Performance Analysis of a Renesas M16C/62P Processor* – 8/2007.
41. Sushant Sengupta, MSEE – *A Wireless Strain Gauge Measurement System* – 5/2007.
42. Christina Warren, MSEE – *Embedded Systems Micro File System* – 5/2007.
43. Pinank Mahesh Shah, MSEE – *A Wireless Strain Gauge Measurement System* – 5/2007.
44. Asma Khizer, MSEE – *USB Solutions for Small Embedded System Applications* – 5/2007.
45. Venkat Dronamraju, MSEE – *Educational Board for Stepper Motor Interface* - 12/2006.
46. Ritesh Savla, MSEE – *A Wireless Strain Gauge Measurement System* – 12/2006.
47. Michael Thomas, MSEE – *DSP algorithms on a microcontroller* – 8/2006.
48. Guru Mysore, MSEE – *Embedded Linux* – 8/2006.
49. Aarthi Balan, MSEE – *Software Development Processes* – 5/2006.

50. Tejaswini Gadicherla, MSEE – *Communication between a Zigbee Board and Renesas MSV30262-SKP Board Using I2C* – 5/2006.
51. Nagalakshmi Kurnella, MSEE – *Wireless Communications between Stiquito Robots*– 4/2006.
52. Arthi Varadarajan, MSEE – *Porting a Real-time Operating System to the ATmega 128L* – 12/2005.
53. Brian Newberry, MSEE – *Data Storage Solution for Digital Signal Processors*- 12/2005.
54. William Snyder, MSEE – *USB2.0 Communications* – 5/2005.
55. George Sandler, MSEE – *A High-Precision Coulomb Counter Circuit* – 8/2004.
56. Venkateswara R. Chitturi, MSCSE - *Success of an Institute on Engineering and Technology Institute for Secondary School Teachers* – 8/1995 (Arkansas).

Undergraduate Projects (at UNC Charlotte unless noted)

1. Sergey Morozov (from Virginia Tech), supported by the ECE Research Experiences for Undergraduates, UNC Charlotte Graduate School Grant, Summer 2008.
2. Melinda Dees, BSEE and BSCpE – *Robotics in Sub-zero Space Environments*, Undergraduate Research Grant awarded by the NC Space Grant Consortium– 5/2007.
3. Kristen Reband, BSCpE, *Robotic Propulsion Materials in Sub-zero Space Environments*, Undergraduate Research supported by the NC Space Grant Consortium award – 5/2008.

HONORS AND AWARDS

- Selected for the Exploration Systems Mission Directorate/Space Grant Consortia Faculty Cohort for the Johnson Space Center, Summer 2009.
- Selected for the Exploration Systems Mission Directorate/Space Grant Consortia Faculty Cohort for the Johnson Space Center, Summer 2008.
- IEEE Region 3 Outstanding Student Branch Counselor Award 2008 (awarded October 10, 2009).
- UNC Charlotte Lifetime Achievement for Advising Award, awarded by UNC Charlotte Student Organizations, Dean of Students, April 2008.
- IEEE Region 3 Outstanding Educator Award 2007 (awarded March 24, 2007).
- Selected for University faculty attendance stipend to Microsoft Mobile & Embedded DevCon 2006, Las Vegas, May 8-11, 2006 (all expenses paid).
- Selected by UNC Charlotte ECE Department as department representative for College of Engineering Outstanding Undergraduate Instructor Award, 2005, 2006.
- Selected for NSF-funded workshop, “Internship on rapid system prototyping technologies with focus on digital signal processing, artificial neural networks, communications, and instrumentation and control systems”, Pan-American Studies Institute in Cochabamba, Bolivia, June 7-19, 2004.
- Selected for invitation-only NSF Workshop on Wireless Communications, Cincinnati, OH, June 12-14, 1999.
- Outstanding Achievement Award, Ericsson, January 1999 and April 1998.
- Selected for University of Arkansas Teaching Workshop, August 1995 (\$1,000 Stipend).
- University of Arkansas College of Engineering Outstanding Researcher Award, May 1995.
- Selected for NSF Workshop on Logic Synthesis and FPGA Programming, Mississippi State University, Starkville, MS, June 20-25, 1993.
- Selected for Argonne National Laboratory (Department of Energy) Summer Institute in Parallel Programming, Argonne, IL, September 5-15, 1989.
- IBM Resident Study Scholar, August 1988 - August 1990.

PROFESSIONAL AFFILIATIONS

- Institute of Electrical and Electronics Engineers, Senior Member (IEEE)
- IEEE Computer Society

- IEEE Technical Committee on Computer Architecture
- IEEE Technical Committee on Software Engineering
- IEEE Technical Committee on Parallel Computing
- Project Management Institute (PMI)
- American Society for Engineering Education (ASEE)
- Eta Kappa Nu Electrical Engineering Honor Society
- Charlotte Software Process Improvement Network, an SEI organization
- Sigma Xi (2005-2008)