Paul A. Bender

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Research Interests

Internet of Things, Sensor Networks, Cyber-Physical Systems, Sensor Webs, Operating Systems, Networking, Distributed Systems, Mobile Computing, Real Time Systems, Embedded Systems, Multimedia Communications, Coding Theory, System Security, Software Engineering, Programming Languages, Scientific Computing, Computational Mathematics.

Education

Ph.D., Computer Science and Engineering, Wright State University, June, 2008.
M.S., Computational Mathematics, Ohio University, June, 2004.
B.S., Computer Science, Southwest Missouri State University, May 1998.

Teaching Experience

Wright State University

Computer Science and Engineering Department (Summer 2016-Present)
Dayton,Ohio

- **Adjunct Member of the Graduate Faculty,** June 2016-Present.
  - Served on Thesis Committees

Ohio Dominican University

Department of Mathematics and Computer Science (Spring-2016-Present)
Columbus,Ohio

- **Assistant Professor of Software Engineering**, Tenure Track January 2016-Present.
  - Lower Division Courses
    - MTH 102 Beginning Algebra, Spring 2017 (Online), Spring 2018 (Face to Face)
    - CIS 230 Operating Systems, Spring 2016
    - CIS 234 Database Management Systems, Fall 2016
    - SWE 201 Introduction to Software Engineering, Fall 2016, Fall 2017
    - SWE 211 Software Construction, Spring 2016, Spring 2017, Spring 2018
    - SWE 212 Human Computer Interaction, Spring 2016, Spring 2018
  - Upper Division Courses
    - SWE 311 Software Design & Architecture, Fall 2016, Fall 2017
    - SWE 321 Software Quality Assurance and Testing, Spring 2017, Spring 2018
    - SWE 322 Requirements Engineering, Spring 2017, Spring 2018
    - SWE 478 Software Engineering Design Project, Fall 2017

- MTH/CIS 479 Senior Capstone Seminar, Fall 2017

McNeese State University

Department of Electrical Engineering and Computer Science (Fall 2013 to Fall 2015)
Department of Mathematics, Computer Science, and Statistics (Fall 2008 to Summer 2013)
Lake Charles, Louisiana

- **Assistant Professor of Computer Science**, Tenure Track August 2008-August 2014. Tenured August 2014-December 2015.
  - Lower Division Courses
    - CPST 101 Introduction to Computer Studies, Summer 2013
    - CSCI 102 Introduction to Programming with Basic, Fall 2012 and Spring 2014
    - CSCI 180 Introduction to Computer Science I, Spring 2009, and Spring 2010, Fall 2011
    - CSCI 241 Computer Applications I (MS Excel), Summer 2009,Spring 2010, and Summer 2010
    - CSCI 242 Computer Applications II (MS Access), Fall 2009
    - CSCI 281 Introduction to Computer Science II, Fall 2009, Summer 2010, Summer 2011, Summer 2013, Summer 2014, Spring 2015, and Summer 2015
    - CSCI 282 Introduction to Object Oriented Design, Fall 2014
    - CSCI 284 Selected Topics in Programming (Advanced Visual Basic), Spring 2015
    - MATH 130 Finite Mathematics, Summer 2012
    - MATH 170 Pre-Calculus College Algebra, Spring 2012
    - MATH 185 Discrete Mathematics, Fall 2011
  - Upper Division Courses
    - MATH/CSCI 304 Numerical Methods I, Fall 2008, Fall 2009, Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, and Fall 2015
    - CSCI 308 Advanced Data Structures and Algorithms, Spring 2012
    - CSCI 309 Database Management Systems, Fall 2012
    - CSCI 321 Information Systems Analysis, Fall 2008
    - MATH/CSCI 403 Numerical Methods II, Spring 2009, Spring 2010, Spring 2011, Spring 2012, Spring 2013, Spring 2014, and Spring 2015
    - CSCI 386 Computer Operations and Operating Systems, Spring 2015
    - CSCI 408 Introduction to Formal Language Theory, Spring 2013 and Fall 2014
    - CSCI 409 Topics in Computer Science (Communication and Coding), Summer 2009 and Spring 2011
    - CSCI 409 Topics in Computer Science (Mobile Device Programming), Fall 2010 and Fall 2012
    - CSCI 409 Topics in Computer Science (Robotics), Summer 2012 and Fall 2013
    - CSCI 409 Topics in Computer Science (Computer Security), Spring 2014

- CSCI 409 Topics in Computer Science (Embedded Linux Systems), Summer 2014
- CSCI 415 Operating Systems, Fall 2009, Spring 2011, Fall 2012, Spring 2014, and Fall 2015
- CSCI 416 Programming Languages, Fall 2008, Spring 2010, Fall 2011, Spring 2013, and Fall 2014
- CSCI 419 Computer Architecture, Spring 2009
- CSCI 424 Introduction to Networking, Fall 2010, Spring 2012, Fall 2013, and Fall 2015
- CSCI 427 Introduction to Computer Graphics, Summer 2011, Fall 2015
- MATH 322 Linear Algebra and Matrix Theory, Summer 2015

o Graduate Courses

- CSCI/MATH 533 Numerical Methods II, Spring 2009, Spring 2010, Spring 2011, Spring 2012, Spring 2013, Spring 2014, and Spring 2015
- CSCI 538 Introduction to Formal Language Theory, Spring 2013 and Fall 2014
- CSCI 539 Topics in Computer Science (Communication and Coding), Summer 2009 and Spring 2011
- CSCI 539 Topics in Computer Science (Mobile Device Programming), Fall 2010 and Fall 2012
- CSCI 539 Topics in Computer Science (Robotics), Summer 2012 and Fall 2013
- CSCI 539 Topics in Computer Science (Computer Security), Spring 2014
- CSCI 539 Topics in Computer Science (Embedded Linux Systems), Summer 2014
- CSCI 545 Operating Systems, Fall 2009, Spring 2011, and Fall 2012
- CSCI 546 Programming Languages, Fall 2008, Spring 2010, Fall 2011, Spring 2013 and Fall 2014
- CSCI 554 Introduction to Networking, Fall 2010, Spring 2012, and Fall 2013
- CSCI 557 Introduction to Computer Graphics, Summer 2011
- CSCI 605 Advanced Networking, Spring 2011
- CSCI 605 Computer Vision, Fall 2013
- CSCI 623 Advanced Operating Systems, Spring 2009
- CSCI 631 Theory of Programming Language, Fall 2010

Wright State University

Computer Science and Engineering Department
Dayton,Ohio

- **Course Instructor**, Operating Systems II (CEG 434/634), Winter Quarter 2008.
- **Lab instructor**, Introduction to Computer Science Sequence (CS 240,241, and 242) 7 quarters.
- **Teaching Assistant**, Concurrent Software Design (CEG 434/634) 5 quarters

Ohio University

Department of Mathematics
Athens,Ohio

- **Instructor:**
  - College Algebra (Math 113), 3 quarters
  - Pre-Calculus and Trigonometry (Math 115), 1 Quarter
  - Elementary topics in Mathematics I – Number Systems (Math 120), 2 Quarters
  - Elementary topics in Mathematics II – Geometry (Math 121), 1 Quarter
  - Statistics (Math 250) 1 Quarter

- Teaching Associate, September 2002 – June 2004

Sterling Commerce Inc.
Dublin, Ohio

- As part of my consulting duties, I taught hands on courses in the use of GENTRAN:Server for Unix to develop custom EDI translation applications.

Service Activities

Ohio Dominican University
Department of Mathematics and Computer Science (Spring-2016-Present)

- Coordinator of Software Engineering, January 2016-Present
- Faculty Senate, January 2016-Present
- Academic Advisor, January 2016-Present
- Served on an Ad-hoc committee on Potential online Computing Curricula offerings.
- Served on an Ad-hoc committee developing a partnership with the University of Dayton for 3+2 Undergraduate/Graduate programs
- Served on an Ad-hoc committee developing exploring computing masters programs
- Initiated the Masters Degree in Software Engineering as both a traditional 2 year masters program and a 5 year BS (In Computer Science) + MS (in Software Engineering) program.
- Served on an Ad-hoc committee for developing and using Open Educational Resources (OER) on campus.

McNeese State University
Lake Charles, Louisiana

Department of Electrical Engineering and Computer Science (Fall 2013 to Fall 2015)

- Coordinator of Computer Science, General Concentration, August 2013-December 2016.
- Academic Advisor, August 2013-December 2015.
- Faculty Advisor, Student Chapter of the ACM, August 2013-December 2015.
- Faculty Advisor, Blue Nation E-Sports (student electronic gaming organization), August 2013-December 2016.

- Human Subjects Institutional Review Board, August 2014-December 2016.
- MSU ACM Programming Competition Team Coach – 2014,2015

College of Science Academic and Computing and Learning Center
- Coordinator of Technicians, January 2013-August 2013

Department of Mathematics, Computer Science, and Statistics (Fall 2008 to Summer 2013)

- Coordinator of Computer Science, September 2012-August 2013.
- Grade Appeals Committee, August 2009-May 2013.
- Faculty Senate, February 2010-May 2013.
- Academic Advisor, August 2009-August 2013.
- Faculty Advisor, Student Chapter of the ACM, August 2009-August 2013.
- MSU ACM Programming Competition Team Coach – 2011,2012

Professional Activities

- Paper Reviewer, The 125th ASEE Annual Conference and Exposition, Computing Information and Technology Division – June, 2018, Salt Lake City, Utah

- Judge, McNeese State University Regional Lego Robotics Competition for Middle School Students, November 2015.

- Member of the Technical Program Committee and paper reviewer, The 4th IEEE International Conference on Connected Vehicles and Expo – October, 2015, Shenzhen, China

- Judge, McNeese State University Regional Lego Robotics Competition for Middle School Students, November 2014.

- Member of the Technical Program Committee and paper reviewer, The 3rd IEEE International Conference on Connected Vehicles and Expo – November, 2014, Vienna, Austria

- Member of the Board of Governors. August 2013-Present, Pledge of the Computing Professional

- Member of the Technical Program Committee and paper reviewer, The 5th IEEE International Workshop on Management of Emerging Networks and Services – December, 2013, Atlanta, Georgia

- Member of the Technical Program Committee and paper reviewer, The 2nd IEEE International Conference on Connected Vehicles and Expo – December, 2013, Las Vegas, Nevada

- Judge, McNeese State University Regional Lego Robotics Competition for Middle School Students, November 2013.

- Member of the Technical Program Committee and paper reviewer, The 4th IEEE International Workshop on Management of Emerging Networks and Services – December, 2012, Anaheim, California

- Judge, McNeese State University Regional Lego Robotics Competition for Middle School Students, November 2012.

- Judge, McNeese State University Regional Lego Robotics Competition for Middle School Students, February 2012.

- Member of the Technical Program Committee and paper reviewer, The 3rd International Workshop on Interconnection of Wireless Sensor Networks – May, 2012, Hangzhou,China

- Member of the Technical Program Committee and paper reviewer, The 3rd IEEE International Workshop on Management of Emerging Networks and Services – December, 2011, Houston,TX

- Member of the Technical Program Committee and paper reviewer, The 2nd International Workshop on Interconnection of Wireless Sensor Networks – June, 2011, Barcelona,Spain

- Member of the Technical Program Committee and paper reviewer, The 2nd IEEE International Workshop on Management of Emerging Networks and Services – December, 2010, Miami,FL

- Periodic paper reviewer for Journals – August 2008 to present:
  - Algorithms
  - Advances in Multimedia
  - Sensors
  - Journal of Low Power Electronics and Applications
  - Sustainability
  - Symmetry

- Volunteer contest co-coordinator and judge, Wright State University ACM Local Programming Contest - October 2006

- Volunteer contest co-coordinator and judge, Wright State University ACM Local Programming Contest – October 2005

- Volunteer technical advisor for Middle School Lego Robotics Competition teams – Fall 2005

- Volunteer software developer, JMRI, http://jmri.sf.net - Fall 2002 to Present.

Research and Grants

Ohio Dominican University

Department of Mathematics and Computer Science (Spring-2016-Present)
Columbus,Ohio

- State of Ohio Open Educational Resources (OER) Grant January,2018-August,2018

  Contribution: Content developer for the Linear Algebra team in Cohort 1

McNeese State University

Lake Charles, Louisiana

Department of Electrical Engineering and Computer Science (Fall 2013 to Fall 2015)

- AT&T Professorship 2014-2015

  Contribution: Directed the project. Funds from this grant have been used to finance a student competition team for the Marine Advanced Technology Education ROV Competition.

- McNeese State University 2014-2015 LaACES Project: *Measurement of Pressure, Temperature, Humidity and Sound Speed Using LaACES Balloon*

  Contribution: Faculty Advisor to student teams.

- Juliet Hardtner Endowed Professorship #2 2013-2014

  Contribution: Directed the project. Funds from this grant have been used to purchase camera equipment for distributed computer vision research.

- McNeese State University 2013-2014 LaACES Project: *Measurement of Ultraviolet Radiation, Oxygen and Hydrogen Using LaACES Balloon*

  Contribution: Faculty Advisor to student teams.

- Endowed Professorship in Science 2012-2013

  Contribution: Directed the project. Funds from this grant have been used to fund travel to The 7th International Conference on Distributed Smart Camera Networks for presentation of work in the area of distributed computer vision.

Department of Mathematics, Computer Science, and Statistics (Fall 2008 to Summer 2013)

- LA Board of Regents Enhancement Grant: *Arduino Laboratory Hardware for Computer Science Courses*, 2011-2012

Contribution: Served as Lead Principle Investigator. Grant funds are being utilized to purchase Arduino hardware for use in a variety of courses across the computer science curriculum.

- Endowed Professorship in Science 2011-2012

Contribution: Directed the project. Funds from this grant have been used to purchase wireless sensor network equipment for use in cross-discipline research in environmental sensing.

- TASC Equipment and Software, McNeese State University, 2012

Contribution: Wrote grant and coordinated the purchase of 66 Sparkfun Inventor Kits for Arduino. This set of hardware is utilized in introductory computer science courses to provide a simplified computing environment for student learning.

- Wireless sensor network testbed (funded through McNeese State University Endowed Professorship in Computer Science 2008-2009).

Contributions: Lead development of sensor network infrastructure. Mentored student researchers in design, use, and deployment of Ad-Hoc Wireless Sensor Networks.

Wright State University
Computer Science and Engineering Department Fall 2004 to Spring 2008
Dayton, Ohio

- Music Telepresence (partially supported by NSF Award #0555457), A co-operative project with the University of Rochester and the University of Miami.

  Contributions: Management of network and computing resources. Aid fellow graduate students with: software development, network programming, Systems administration, and test bed setup and configuration.

- Wireless Ad Hoc and Sensor Networks (partially supported by NSF Award #0454170)

  Contributions: Lead development of Image/Video sensor Network testbed. Aid graduate and undergraduate students with programming of sensor nodes and research.

- WSU Mobile Information and Communication Systems Lab

  Manage computing resources for research lab, including serving as primary contact for campus computing services.

Other Professional Experience

Sterling Commerce Inc.
Dublin, Ohio

Associate Mapping Specialist
November 1998 – November 1999
Associate Remote Consultant
November 1999 – September 2000
Remote Consultant
September 2000 – January 2002
Software Developer
January 2002 - August 2002

Developed and supported customer specific translation, data acquisition, and billing data collection applications in C, C++, and Visual Basic used in a hosted business to business communication environment based on GENTRAN:SERVER for Windows NT. Remotely supported and developed applications web based applications for Business to Business Communications utilizing GENTRAN:WEBSUITE, HTML, XML, Java, and to a lesser extent ASP. GENTRAN:SERVER for UNIX and GENTRAN:SERVER for Windows NT were utilized as back end integration systems and Microsoft Internet Information Server and the Apache Web Server were used as front end delivery systems. Remotely supported and administered all aspects of GENTRAN:SERVER for UNIX installations for several customers.

Prime inc.
Springfield, Missouri

Student Programmer / MIS Computer Operations
August 1997 - November 1998

Maintained proprietary and purchased software written in RPG/400 and RPG/IV on an IBM AS/400 used to support operations of an interstate trucking fleet. Primarily responsible for analysis, implementation and testing of solutions to solve problems with the year 2000. Additional duties include, answering calls to the in house help desk, and troubleshooting end user problems, or assigning calls to the in house technical staff, as appropriate.

Southwest Missouri State University
Springfield, Missouri

System Administrator
January 1997 - May 1998

Maintained hardware and software components of two IBM PC compatible, Linux based, Internet servers, also used as platforms for course work. Duties included administering user accounts, automating system maintenance tasks with UNIX shell scripts, developing and enforcing account usage and security policies, and aiding students and faculty members with resolving problems encountered while using the system.

Association Affiliations

Member IEEE, IEEE Computer Society, ACM, ACM SIGMOBILE, ACM SIGSOFT, ASEE, CCSC, USENIX, LISA, Pledge of the Computing Professional.

Publications and Presentations Under Review

P. Bender , *Software Engineering Project Selection for Small Student Populations*. **Abstract submitted and accepted, paper under review.** The 125th ASEE Annual Conference and Exposition, Software Engineering Division – June, 2018, Salt Lake City, Utah

Publications and Presentations

Perry S, Davis L, Bender P, Thistlethwaite J, Broeder C, Lauver JD, Cayot TE. *Estimation of the lactate threshold using a new wireless near-infrared spectroscopy system*. Medicine and Science in Sports and Exercise. 49(5): S563, 2017.

P. Bender, "Wireless Sensor/Actuator Network for Model Railroad Control", Demo presented at The 12th ACM Conference on Embedded Networked Sensor Systems (SenSys'14), Memphis, TN, November, 2014.

P. Bender, J. Beekman and T. Williams, "Demo: Rapid deployment multi-camera ball tracking system for robotic soccer", Demo presented at the 7th International Conference on Distributed Smart Cameras (ICDSC13), Palm Springs, CA, November, 2013.

P. Bender, W. Albrecht and K. Kussmann, "Arduino activities for computer science undergraduate curriculum", Workshop presented at the Consortium for Computing Sciences in Colleges South Central Region Conference, Shreveport,LA , April, 2013.

P. Bender, "Remote Coastal monitoring in Southwest Louisiana", Poster presented at the State of the Coast 2012 Conference, New Orleans, LA, June, 2012.

W. Albrecht, P. Bender and K. Kussmann, "Integrating Microcontrollers in Undergraduate Computer Science Curriculum, Talk presented at the Consortium for Computing Sciences in Colleges South Central Region Conference, Canyon,TX, April, 2012.

P. Bender and K. Kussmann, "Arduino Based Projects in The Computer Science Capstone Course", Talk presented at the Consortium for Computing Sciences in Colleges Central Plains Region Conference, Springfield, MO, April, 2012.

W. Dees, F Phillips, P. Bender, and K. Kussmann, "Aquatic-Based Cyber-Physical Systems in the Calcasieu Estuary" Poster presented at the 6th Annual Workshop on Underwater Sensor networks (WUWNET), Seattle, WA, Dec,2011.

P. Bender and K. Kussmann, "Autonomous Underwater Exploration Using a Swarm of Mobile Sensor Nodes", Talk presented at Scientific Computing Around Louisiana 2011, New Orleans,LA, January,2011.

I. Lafosse, P. Bender, and K. Kussmann, "Automated Navigation Control System for a Powerboat", Poster presented at the 5th Annual Workshop on Underwater Sensor networks (WUWNET), Woods Hole,MA, Sept,2010.

P. Bender and Y. Pei, "Development of an Internet-Accessible Image/Video Sensor Web Testbed", First International Workshop on Interconnection of Wireless Sensor Networks (IWSN 2010), Santa Barbara, CA, June,2010.

P. Bender and K. Kussmann, “Autonomous Underwater Exploration Using A Swarm of Mobile Sensor Nodes”, Poster presented at the 4th Annual Workshop on Underwater Sensor Networks (WUWNet), Berkeley,CA, Nov, 2009.

P. Bender and Y. Pei, “Development of Energy Efficient Image/Video Sensor networks”, *Wireless Personal Computing*, 52(2), 283-301, Oct., 2009.

V. S. Ambetkar, P. Bender, J. Ma, Y. Pei and J. W. Modestino, “Distributed Flow Admission Control for Real-Time Multimedia Services over Wireless Ad Hoc Networks”, International Mobile Multimedia Communications Conference (ACM MobiMedia 2006), Alghero, Sardinia, Italy, Sep., 2006.