Jason B. Forsyth

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Education

Ph.D., Computer Engineering, May 2015
Virginia Polytechnic Institute and State University, Blacksburg, VA
Dissertation Title: *Exploring Electronic Storyboards as Interdisciplinary Design Tools for Pervasive Computing*
Advisor: Dr. Thomas L. Martin

M.S., Computer Engineering, May 2010
Virginia Polytechnic Institute and State University, Blacksburg, VA
Thesis Title: *Wearable Pulse Oximetry in Construction Environments*
Advisor: Dr. Thomas L. Martin

B.S., Computer Engineering, December 2007
Minors: Mathematics, Computer Science, Religion and Culture
Virginia Polytechnic Institute and State University, Blacksburg, VA

Academic Appointments

Associate Professor, Department of Engineering, James Madison University (Aug. 2021 – present)

Assistant Professor, Department of Engineering, James Madison University (Aug. 2018 – August 2021)

Assistant Professor, Department of Engineering and Computer Science, York College of Pennsylvania (Aug. 2015 – Aug. 2018)

Honors and Awards

Best Paper award from *IEEE Transactions on Automation Science and Engineering* for "Feasibility of Intelligent Monitoring of Construction Workers for Carbon Monoxide Poisoning" (2012)

Best Paper nominee from *IEEE International Symposium on Wearable Computers* for "An Interdisciplinary Undergraduate Design Course for Wearable and Pervasive Computing Products" (2011)

William Blackwell Award from Virginia Tech ECE Department for "Feasibility of Intelligent Monitoring of Construction Workers for Carbon Monoxide Poisoning" (2011)

Nomination for Leading Lights New River Valley Service Award for middle school tutoring/mentoring program (2012)

Nomination for Paul E. Torgersen Graduate Student Research Excellence Award, Virginia Tech (2010)

Research and Scholarship

Research Interests and Experience

Wearable Computing: medical applications that allow monitoring, alleviation, or prevention of severe or chronic conditions in daily life.

Ubiquitous/Pervasive Computing: prototyping tools for interdisciplinary teams to provide consistent, cross-domain views for rapid iteration of prototypes.

Engineering Education: impact of service-oriented multidisciplinary design experiences on engineering student efficacy; integration of design-based experiences into engineering curriculum

Assistant/Associate Professor, James Madison University (August 2018 – Present)
- Research examining wearable computing solutions for adherence to physical therapy activities on chronic patients; Collaboration with Bucknell University to collect physiological data from wearable sensors on college athletes [P1, P3, P4].

Assistant Professor, York College of Pennsylvania (August 2015 – August 2018)
- Received two grants to create community-based multidisciplinary capstone project; grant also supports research on project's impact on engineering student efficacy, improvement of K-8 student science outcomes, and departmental recruitment of underrepresented populations [P5, C8, C9]

Research Assistant, ECE Department, Virginia Tech, (August 2009 – May 2015)
- Created prototyping exercises and design tools to improve collaboration between Computer Engineering, Industrial Design, and Marketing students for pervasive computing products. [J2, C13, C15, C16, P7].
- Developed wearable safety system for construction and roadside workers. [J1, C12, C17, B1].

Graduate Assistant, Virginia Tech Institute for Creativity, Arts, and Technology, (August 2013 – May 2015)
- Creator and instructor for STEAM (Science, Technology, Engineering, Arts, and Math) educational experiences for K12 students [C14, P8].

Internal Funding (James Madison University)

Jason Forsyth, "Prototyping Wearables for Physical Therapy", $690 from College of Integrated Science and Engineering Mini-Grant. Awarded 3/24/2021.

Jason Forsyth, Michael Stewart, "A Wearable Computing System to Increase Access to Healthcare and Patient Outcomes in Physical Rehabilitation Exercises", $2,500 from College of Integrated Science and Engineering Faculty Development Fund. Proposal supports equipment purchases and student researchers to a novel wearable computing system for use in physical therapy and rehabilitation exercises. Awarded 2/1/2019. Related publications [P1,P3 ,P4].

External Funding (York College of Pennsylvania)

Jason Forsyth, Nicole Hesson, "Developing an Automated Greenhouse at Alexander D. Goode Elementary School to Serve as a Living Laboratory for Science Education", $9,746 over 12 months from the York County Community Foundation. Proposal supports research and capital expenses related to the automated greenhouse capstone project. Awarded 1/1/2017. Related publications: [C8, C9]

Internal Funding (York College of Pennsylvania)

Jason Forsyth, Nicole Hesson; "Addressing Economic and Educational Disadvantages in York City through Engineering Design Projects", $17,000 over 12 months from the Office of the President. Proposal supports research investigating the impact of service-based multidisciplinary projects on engineering students, faculty, and community partners. Also, provides material support for capstone projects to develop an automated greenhouse, assistive technologies, and targeted curricula for K-8 students. Awarded: 3/24/2016. Related publications: [C8, C9]

Book Chapters

B1. R. Younes, K. Hines, **J. Forsyth**, J. Dennis, T. Martin, and M. Jones, "The design of smart garments for motion capture and activity classification," Chapter 27 in *Smart Textiles and Their Applications*, V. Koncar (editor), Woodhead Publishing, Duxford, UK, 2016, pp. 627-655

Journal Publications

J1. **Jason Forsyth**, Tom Martin, Deborah Young-Corbett, Ed Dorsa, "Feasibility of Intelligent Monitoring of Construction Workers for Carbon Monoxide Poisoning", *IEEE Trans. on Automation Science and Engineering*, Volume 9, Issue 3, pp. 505-515, July 2012 (16% acceptance rate) **(2012 Best Paper Award)**

J2. Tom Martin, Kahyun Kim, **Jason Forsyth**, Lisa McNair, Eloise Coupey, Ed Dorsa, "Discipline-Based Instruction to Promote Interdisciplinary Design of Wearable and Pervasive Computing Products", *Personal and Ubiquitous Computing*, Volume 17, Issue 3, pp. 465-478, 2013

Peer-Reviewed Conference Publications (Full Papers)

C1. Zixuan Yan, Rahib Younes, **Jason Forsyth**, "ResNet-like CNN Architecture and Saliency Map for Human Activity Recognition", EAI MobiCASE 2021 (accepted for publication as full paper) – September 2021

C2. Daniel Castaneda, **Jason Forsyth**, Shraddha Joshi, Callie Miller, Kyle Gipson, Jacquelyn Nagel, Robert Nagel, Kurt Paterson, "24for24: A Virtual Summer Bridge Program in Multiple 24- Minute Sessions for the Collegiate Class of 2024", 2020 Sixth International Conference on e-Learning (econf), Virtual, December 2020

C3. Michael James, Homero Murzi, **Jason Forsyth**, Lilianny Virguez, Pamela Dickrell, "Exploring Perceptions of Disciplines using Arts-Informed Methods", Proceedings of the American Society of Engineering Education Annual Conference – First Year Program Division, Virtual, June 2020

C4. Michael Stewart, **Jason Forsyth**, Zamua Nasrawt, "EduGit: Toward a Platform for Publishing and Adopting Course Content" at the 21st International Conference of Human-Computer Interaction (HCII), Orlando, FL, July 26-31, 2019.

C5. Robert Nagel, Jacquelyn Nagel, Callie Miller, **Jason Forsyth**, Shraddha Joshi, Kyle Gipson, "Engagement in Practice: Engaging with the Community One Bike at a Time", Proceedings of the American Society of Engineering Education Annual Conference – Community Engagement Division, Tampa Bay, FL, June 16-19, 2019

C6. Kala Meah, James Moscola, Jim Kearns, Eleanor Leung, **Jason Forsyth**, "A Seven-week Module to Introduce Electrical and Computer Engineering to Freshmen Engineering Students", Proceedings of the American Society of Engineering Education Annual Conference – First-Year Programs Division, Tampa Bay, FL, June 16-19, 2019

C7. Kala Meah, **Jason Forsyth**, James Moscola, "A Smart Sensor Network for an Automated Urban Greenhouse", 2019 International Conference on Robotics, Electrical and Signal Progressing Techniques (ICREST), Dhaka, Bangladesh, January 10-12, 2019

C8. **Jason Forsyth**, Mark Budnik, Randi Shedlosky, Jeff Will, "Effects of Service-Learning Projects on Capstone Student Motivation", Proceedings of the American Society of Engineering Education Annual Conference – Multidisciplinary Engineering Division, Salt Lake City, Utah, June 24-27, 2018

C9. **Jason Forsyth**, Nicole Hesson, "Benefits and Challenges Transitioning to Community Service Multidisciplinary Capstone Projects", Proceedings of the American Society of Engineering Education Annual Conference – Multidisciplinary Engineering Division, Columbus, Ohio, June 25-28, 2017

C10. Stephen Wilkerson, **Jason Forsyth**, Christopher Korpela, "Project-Based Learning Using the Robotic Operating System (ROS) for Undergraduate Research Applications", Proceedings of the American Society of Engineering Education Annual Conference – Multidisciplinary Engineering Division, Columbus, Ohio, June 25-28, 2017

C11.   Stephen Wilkerson, **Jason Forsyth**, Cara Sperbeck, Matthew Jones, Patrick Lynn, "A Student Project Using Robotic Operating System (ROS) for Undergraduate Research", Proceedings of the American Society of Engineering Education Annual Conference – Computing & Information Division, Columbus, Ohio, June 25-28, 2017

C12.   **Jason Forsyth**, Tom Martin, Darrell Bowman, "Feasibility of GPS-based Warning System for Roadside Workers", IEEE International Conference on Connected Vehicles and Expo, Vienna, Austria, November 3-7, 2014 (33% acceptance rate)

C13.   **Jason Forsyth**, Tom Martin, "Extracting Behavioral Information from Electronic Storyboards", Proceedings of the 6th ACM SIGCHI Symposium on Engineering Interactive Computer Systems, Rome, Italy, June 17-20, 2014 (18% acceptance rate)

C14.   Blake Sawyer, **Jason Forsyth**, Taylor O'Connor, Brennon Bortz, Teri Finn, Liesl Baum, Ivica Ico Bukvic, Benjamin Knapp, Dane Webster, "Form, Function, and Performances in a Musical Instrument MAKErs Camp", Proceedings of the 44th SIGCSE Technical Symposium on Computer Science Education, Denver, CO, March 6-9, 2013, pp. 669-674 (37.8% of 293 accepted as long papers)

C15.   Lisa McNair, Kahyun Kim, **Jason Forsyth**, Ed Dorsa, Tom Martin, Eloise Coupey, "Interdisciplinary Pedagogy for Pervasive Computing Design Processes: An Evaluative Analysis," American Society of Engineering Education Annual Conference. San Antonio, TX, June 11, 2012

C16.   Tom Martin, Kahyun Kim, **Jason Forsyth**, Lisa McNair, Eloise Coupey, Ed Dorsa, "An Interdisciplinary Undergraduate Design Course for Wearable and Pervasive Computing Products", 2011 IEEE International Symposium on Wearable Computers (ISWC), San Francisco, CA, June 12-15 2011, pp.61-68 **(Best Paper Nominee)** (19% of 31 accepted as long papers)

C17.   **Jason Forsyth**, Tom Martin, Deborah Young-Corbett, Ed Dorsa; "Feasibility Study of a Wearable Carbon Monoxide Warning System for Construction Workers," 2011 IEEE International Conference on Pervasive Computing and Communications (PerCom), Seattle, WA, March 21-25 2011, pp.28-36 (11% of 156 accepted as long papers)

Peer-Reviewed Conference Posters, Panels, and Presentations

P1.   Stephen Mitchell*, **Jason Forsyth**, Michael S. Thompson, "Exploring Amateur Performance in Athletic Tests Using Wearable Sensors" 2021 Systems and Information Engineering Design Symposium (SIEDS), Charlottesville, VA, USA, 2021 (published as full paper, reviewed as abstract)

P2.   Jorge Barajas, Christian Detweiler, Cailyn Lager, Charles Seaver, Mark Vakrchuk, Justin Henriques, **Jason Forsyth**, "A Toolkit for the Spatiotemporal Analysis of Eutrophication Using Multispectral Imagery Collected from Drones" 2021 Systems and Information Engineering Design Symposium (SIEDS), Charlottesville, VA, USA, 2021 (published as full paper, reviewed as abstract)

P3.   Sophia Cronin*, Tyler Webster*, **Jason Forsyth** "Student Research Short: Wearable Computing for Physical Rehabilitation", Presentation at 2021 ACM Capital Region Celebration of Women in Computing (CAPWIC) (refereed as abstract)

P4.   Stephen Mitchell*, **Jason Forsyth**, Michael Thompson, "Assessing Athletic Performance with a Wearable Inertial Measurement Unit", Presentation at 2021 IEEE South East Conference, Virtual. (refereed as a short paper)

P5.   Nicole Hesson , **Jason Forsyth**, "Effects of Informal versus School-Based Field Experience on Elementary Pre-service Teachers' Self-Efficacy for Teaching Science", Presentation at the 2020 National Association for Research in Science Teaching (NARST) International Conference, Portland, Oregon (refereed as short paper)

P6. I. J. Miller, B. Schieber, Z. De Bay, E. Benner, J. Ortiz, J. Girdner, P. Patel, D. Coradazzi, J. Henriques, **J. Forsyth**, "Analyzing crop health in vineyards through a multispectral imaging and drone system," 2020 Systems and Information Engineering Design Symposium (SIEDS), Charlottesville, VA, USA, 2020 (published as full paper, reviewed as abstract)

P7. **Jason Forsyth**, "Using Electronic Storyboards to Support Interdisciplinary Design of Pervasive Computing Systems", Poster Presentation for the Sixth Annual Ph.D. Forum on Pervasive Computing and Communications (PerCom), San Diego, CA, March 20, 2013

P8. Jamie Simmons, Liesl Baum, **Jason Forsyth**, "Engaging Middle School Students in SEAD Learning Through Smart Product Design", Conference on Creativity and Fabrication in Education, Oct 25-26, 2014, Stanford, CA (refereed short paper for panel discussion)

Other Publications

O1. Ed Dorsa, Eloise Coupey, Tom Martin, Lisa McNair, **Jason Forsyth**, Sophie Kim, "Design Thinking Meets Computational Thinking – An Interdisciplinary Exercise in Developing Smart Product", Industrial Design Society of America Education Symposium, August 2012

O2. **Jason Forsyth**, Tom Martin, "Tools for Interdisciplinary Design of Pervasive Computing", *International Journal of Pervasive Computing and Communications*, Volume 8, Issue 2, pp. 112-132, June 2012 (Invited Survey)

O3. Tom Martin, Eloise Coupey, Lisa McNair, Ed Dorsa, **Jason Forsyth**, Sophie Kim, Ron Kemnitzer, "An Interdisciplinary Design Course for Pervasive Computing", *IEEE Pervasive Computing*, Volume 11, Issue 1, pp.80-83, January 2012

Invited Talks

1. J. Forsyth, "Applications of Wearable Computing for Physical Therapy and Rehabilitation", Research Seminar for the JMU Computer Science Department, February 22nd, 2019

Creative Works and Exhibitions

1. Take 499 – An interactive architecture installation at the York College Faculty Biennale in Fall 2016. A collaboration with Matthew Campbell (York College Department of Arts and Communication) explores various notions of "time" through music, mechanics, and the prime number distribution (video).

Undergraduate Independent Study / Research Students

Current Students
Stephen Mitchell, Topic: Automatic Detection and Assessment of Athlete Performance during a Drop Jump Test. *(Research in collaboration with Bucknell University)*
- Presented at the 2019 Mid-Atlantic Regional Conference on Undergraduate Scholarship (MARCUS) at Randolph College
- Poster presentation at the 2021 IEEE South East Conference (refereed as short paper)[P4]
- Full paper and presentation at SIEDS 2021 [P1]

Tyler Webster, Topic: Exploration of visual and light feedback for activity correction and reinforcement in physical therapy exercises. (Fall 2019 – present)
- Presented at the 2021 ACM Capital Area Conference on Women in Computing (CAPWIC) [P1]

Graduated Students
Jonathan Li, Topic: Development of 3D modeling forms to render physical motion with inertial measurement units. (Spring 2020 – Spring 2021)

Sophia Cronin, Topic: Exploration of haptic feedback for activity correction and reinforcement in physical therapy exercises. (Fall 2019 – Spring 2021)
- Presented at the 2021 ACM Capital Area Conference on Women in Computing (CAPWIC)[P1]

Sanarea Ali, Topic: Using wearable inertial measurement units to support visualization and feedback mechanisms for physicians supervising patients undergoing physical therapy applications. (Graduated 2020)
- Presented at the 2019 ACM Capital Area Conference on Women in Computing (CAPWIC)

Ernie Benner, Topic: Development of Software Tools to Support Activity Recognition in Physical Therapy Applications (Graduated 2020)

Summer 2018
Amanda Redhouse, Topic: Application of Convolution Neural Networks for On-body Activity Recognition

Spring 2018
Ashleen Hayes and Amanda Redhouse. Topic: Development of on-body sensing and human activity recognition for physical therapy applications.

Summer 2017
Shawn O'Brien. Topic: Exploration of wireless sensor network for on-body wearable activity recognition.

Spring 2017
Nicholas Whorley, Benjamin Newlin. Topics: Development of autonomous robotic systems using the Robot Operating System (ROS). Student projects included control of a robotic arm and voice control of a Turtlebot robot.

Fall 2016
Matthew Jones, Cara Sperbeck, Patrick Lynn. Topics: Development of autonomous robotic systems using the Robot Operating System (ROS). Student projects included: target tracking using fiducial markers and object color, and navigation using existing architectural drawings. Description of student work and experiences in [C2, C3].

Professional Activities

Virtual Platform Organizer, ACM Capital Region Celebration of Women in Computing Conference (2021)

Publications Chair, IEEE Systems and Information Engineering Design Symposium (SIEDS) (2021)

Program Chair, ASEE Engineering Innovation and Entrepreneurship (ENT) Division (2019-2020)

Program Committee Member, ACM Capital Region Celebration of Women in Computing Conference (2019 – present)

Reviewer, ASEE National Conference Multidisciplinary Engineering Division (2016 - present)
Reviewer, ASEE National Conference Electrical and Computer Engineering Division (2016 - present)
Reviewer, ASEE National Conference Entrepreneurship and Engineering Innovation Division (2016 – present)
Reviewer, ASEE National Conference K-12 Division (2016)

Reviewer, IEEE Transactions on Education (2016-2017)

Reviewer, IEEE International Symposium on Wearable Computers (ISWC) (2013, 2015, 2016, 2021)
Reviewer, ACM Conference on Human Factors in Computing Systems (CHI) (2020)
Reviewer, ACM/IEEE International Conference on Ubiquitous Computing (Ubicomp) (2015, 2016)
Reviewer, ACM Conference on Designing Interactive Systems (DIS) Works-in-Progress (2014)

Student Volunteer, ACM Conference on Designing Interactive Systems, Vancouver, CA, June 2014
Student Volunteer, IEEE ISWC/Pervasive 2011, San Francisco, June 2011
Student Volunteer, IEEE PerCom 2011, Seattle WA, March 2011

Judging Committee, Virginia Tech Graduate Research Symposium, September 2011-April 2012

Affiliations

Member: IEEE, HKN, ACM, ASEE

Teaching Experience

Teaching Experience (James Madison University)

Summary of Courses Taught at James Madison University

Course Title	Semester Offered
ENGR 112: Engineering Decisions	Spring 2019, Spring 2020, Spring 2021
ENGR 280: Real-World Modeling and Programming	Spring 2020
ENGR 280: Python Programming with Biometric Data	Fall 2020
ENGR 231: Engineering Design I	Fall 2018, Fall 2020, Fall 2021
ENGR 232: Engineering Design II	Spring 2021
ENGR 313: Circuits and Instrumentation	Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, Fall 2021
ENGR 498: Design for the Internet of Things	Fall 2019, Fall 2021
ENGR 480 / CS 497: Autonomous Vehicles (co-taught with Dr. Nathan Sprague)	Spring 2021

Description of Selected Courses

ENGR 112 – Engineering Decisions: Freshman engineering course focused on human-centered design, engineering decision making, and project management through a community-based project. Current applications use a tethered weather balloon to monitor environment conditions and create value for a local community stakeholder. Additional skills learned include MATLAB, SolidWorks, and Arduino with sensors and actuators.

ENGR 231 – Engineering Design: Sophomore engineering course teaching the fundamentals of engineering design process including stakeholder identification, design objectives, specifications, constraints, and preliminary design. Students develop a human-powered vehicle for persons with disabilities. End of the semester results in a preliminary design and the project is continued into the Spring. Additional topics covered include teaming, project management, static analysis, and machining.

ENGR 313 – Circuits and Instrumentation: Junior/senior course covering broad topics in DC/AC circuits and power analysis. Course prepares students for capstone work involving electronics and for the FE exam. Topics covered include: resistive circuit analysis, transistors, operational amplifiers, first-order circuits, second-order circuits, analog and digital filters, and phasor space analysis. Lecture topics are reinforced via weekly lab sessions and include two design-build projects throughout the semester.

Teaching Experience (York College of Pennsylvania)

Summary of Courses Taught at York College of Pennsylvania

Course Title	Semester Offered
FYS 100 – Creative Computing	Fall 2016, 2017 (co-taught with Dr. David Hovemeyer)
EGR 100 – Engineering Practice and Design Studio	Fall 2015, 2016
ECE 220 – Design and Analysis of Digital Circuits	Fall 2015, 2016, 2017
ECE 260 – Fundamentals of Computer Engineering	Spring 2016
ECE 335 – Discrete Math with Applications	Summer 2016, 2017
ECE 370 – Microprocessor System Design	Summer 2016, 2017, 2018
ECE 400 – Capstone Design I	Summer 2016, 2017, 2018
ECE 420 – Embedded System Design	Summer 2016, 2017, 2018

Description of Selected Courses

FYS 100 – Creative Computing: First year seminar engages freshman students in employing computing systems to develop artistic and creative applications. Students utilize Processing, Arduino, and Raspberry Pi computers to

create interactive installations as a final project. Hands-on labs, contemporary readings, and class discussions center around the broader them of "Can computers create art?"

EGR 100 – Engineering Practice and Design Studio: Introductory engineering course for freshman students shared between the Mechanical and Electrical and Computer Engineering programs. Students engage in hands-on learning with basic electronics and computing systems to develop design and debugging skills. Final project uses a small robotic platform and an Arduino to create a line-following robot.

ECE 220 – Design and Analysis of Digital Circuits: Sophomore course introducing electrical and computer engineering students to digital circuit design including combinational and sequential circuits. Associated lab section provides instruction in circuit design using discrete ICs as well as projects in Verilog HDL.

ECE 370 – Microprocessor System Design: Junior combined lecture/lab course providing in-depth instruction on microprocessor architecture, organization, and associated peripherals. Students utilize Silicon Labs ARM processor and C++ to design energy efficient applications using a variety of external sensors. Topics on PCB design, embedded tool chains, and processor initialization are also covered.

ECE 400 – Capstone Design I: Multidisciplinary design experience for electrical, computer, and mechanical engineers. Projects provide a substantial design, build, and test experience over a one year period. Recent projects have focused on community service and include development of an automated greenhouse for a local school, prototype medical devices, and assistive technologies for persons with mental and physical disabilities.

ECE 420 – Embedded System Design: Culminating course for electrical and computer engineering students combining all aspects of microprocessor systems. Semester long project focuses on development and optimization of wearable pedometer system. Each student must conduct research towards a selected optimization goal of energy efficiency, step count accuracy, or physical size minimization.

Teaching Experience (Virginia Tech)

Teaching Assistant, CS 2984/Arch 3514: Introduction to Physical Computing, Virginia Tech, (Spring 2014)
- Prepared electronics prototyping exercises and delivered lectures on user experience research for interdisciplinary computer science and architecture course.
- Mentored students one-on-one and in teams. Final projects were internally and externally sponsored from NASA, Virginia Tech Transportation Institute, and Virginia Tech Institute for Creativity, Arts, and Technology.

Outreach Instructor, North Cross Middle School, Roanoke, VA (September 2013 – December 2013)
- Developed 13-week product design course for middle school students through the Virginia Tech Institute for Creativity, Arts, and Technology.
- Instruction in market research, sketching, storyboarding, electronic and physical prototyping, and business plan development.
- Final presentations to local business leaders and venture capitalists.

Teaching Assistant, ECE 4974: Interdisciplinary Product Design, Virginia Tech (Fall 2009, 2010, 2011, 2012)
- Developed prototyping exercise for marketing, industrial design, and computer engineering students.
- Advised students on design and implementation of final projects.
- Experience formed the basis for dissertation research on interdisciplinary prototyping of pervasive systems.

Coordinator, Creating Interactive Prototypes Workshop, IDSA Southern Conference, Atlanta GA, (April 2012)
- Taught a half day workshop on interactive prototyping to students and practitioners at a regional industrial design conference.

Instructor, Interactive Architecture Course and Exhibition, Virginia Tech, (Spring 2011)
- Taught five workshops on interactive architecture for 3rd year architecture and interior design students.
- Workshops met once every two weeks to design new interactions based around Arduino microcontrollers and embedded sensors. Each workshop focused on a different physical "sense" such as light, sound, and touch.

– Final projects were developed over one week and exhibited in the department for 15% of semester studio grade.

Director, Fun143 Tutoring Program, Blacksburg VA (August 2008 – December 2011)
– Program sought to increase educational and personal outcomes for disadvantaged middle/high school students.
– Addressed social and economic needs of students and families by providing weekly meals, an open community, and assistance with school supplies, clothes, and other household needs.

College, Departmental, and Community Service and Outreach

National Service

Division Chair-Elect for ASEE Engineering Innovation and Entrepreneurship (ENT) Division (2020-2021)

Program Chair for ASEE Engineering Innovation and Entrepreneurship (ENT) Division (2019-2020)

Program Chair-Elect for ASEE Engineering Innovation and Entrepreneurship (ENT) Division (2018-2019)

College Service

Member, York College Faculty Development Funding Committee (Fall 2016 – August 2018): Committee of the academic senate funding faculty research, travel, and leadership development grants.

Department Service

Member, Department of Engineering Curriculum and Instruction Committee (C&I) (2021 – Present)

Member, Department of Engineering Personnel Advisory Committee (PAC) (2019 – Present)

Member, Engineering First Year Experience Committee (Fall 2017): Departmental committee focusing on improvement of first year engineering student experiences.

Member, Engineering Expansion Committee (Spring 2017): Departmental committee examining possible new majors and programs for expansion.

Electrical Engineering Faculty Search Committee (Fall 2015 – Spring 2016; Fall 2017 – Spring 2018)

Community Service and Outreach

Tech Tinker K-12 Outreach (August 2016 – June 2018): Monthly meet-up for K-12 students and parents to explore STEM topics and engage with YCP faculty and students.

Tech Girlz (April 9th, 2016): Full day workshop at Martin Library (York, PA) in collaboration with United Fiber and Data. Provided workshops for young girls on "tech" topics such as: physical computing with Arduino, circuits with LittleBits, and photo editing with Photoshop.