William M. Mongan, Jr., Ph.D.

CONTACT INFORMATION

William Mongan
Philadelphia, Pennsylvania USA

Phone: (484) 442-0821
E-Mail: bill@billmongan.com
WWW: billmongan.com
LinkedIn: www.linkedin.com/in/billmongan

FACULTY APPOINTMENTS

Associate Professor — Ursinus College
Mathematics and Computer Science
Collegeville, Pennsylvania — 2020-Present

- Associate Professor, 2022-Present
- Assistant Professor (Visiting), 2020-2022

Instructor — Syracuse University
Computer Science and Engineering
Syracuse, New York — 2020-2020

- Instructor (Part-Time / Visiting), 2020-2020

Associate Department Head for Undergraduate Affairs — Drexel University
Computer Science
Philadelphia, Pennsylvania — 2014-2019

- Associate Department Head for Undergraduate Affairs, 2015-2019
- Director of Undergraduate Affairs, 2014-2015

Lecturer — University of Pennsylvania
Computer and Information Science
School of Engineering and Applied Science
Philadelphia, Pennsylvania — 2012-2013

- Lecturer (Part-Time / Visiting), 2012-2013

Teaching Professor — Drexel University
Computer Science
Electrical and Computer Engineering
Philadelphia, Pennsylvania — 2008-2019

- Teaching Professor (full), 2017-2019
- Associate Teaching Professor, 2012-2017
- Assistant Teaching Professor, 2011-2012
- Instructor / Auxiliary Professor, 2008-2011

EDUCATION

Doctor of Philosophy — Drexel University
PhD in Electrical and Computer Engineering
Philadelphia, Pennsylvania — 2013-2018

- PhD Dissertation[1]: *Predictive Analytics on Real-Time Biofeedback for Actionable Classification of Activity State*
- PhD Advisor: Dr. Adam Fontecchio
- Cumulative Graduate GPA: 3.91 on a 4.00 index

Selected Graduate Computer Science and Engineering Course List

- CS521 and CS522: Data Structures and Algorithms I and II
- CS575: Software Design
- CS550: Programming Languages

[1] `https://www.billmongan.com/publication/dissertation`

- CS680: Advanced Topics in Software Engineering: Cyber Forensics
- CS680: Distributed Systems
- CS543: Operating Systems
- CS680: Modeling for Snake Based Robots
- CS544: Networking
- CS525: Theory of Computation
- CS676: Parallel Programming
- CS680: Advanced Topics in Software Engineering: Modeling and Architecture
- CS576: Dependable Software Systems
- CS898: Master's Thesis
- ECE997/ECEC997: Dissertation Research
- ECE998: PhD Dissertation

Master of Science Drexel University
MS in Science of Instruction, School of Education
PA Instructional Certificate in Mathematics
Philadelphia, Pennsylvania 2005-2008

- Earned a Secondary Mathematics (Pennsylvania In-State: Mathematics Grades 7-12) teaching certification in Pennsylvania in July 2007, with a Computer Science subject area add-on in July, 2021
- GPA: 3.86 on a 4.00 index
- Served as a graduate fellow for the STEM educational outreach program in the NSF GK-12 (NSF Award DGE-0538476) Program at the School District of Philadelphia at two schools and grades 5-8 (2006-2008)
- Student taught grade 8 mathematics at Middle Years Alternative School in the School District of Philadelphia

Selected Graduate Teacher Education Course List

- EDUC520: Professional Studies in Instruction
- EDUC522: Evaluation of Instruction
- EDUC524: Current Research in Curriculum and Instruction
- EDUC525: Multimedia in Instructional Design
- EDUC528: Cultural and Historical Significance of Mathematics
- EDUC523: Diagnostic Teaching
- EDLT536: Learning Sciences and Instructional Design
- EDUC533: Virtual Learning Communities
- EDUC540: Field Experience (Student Teaching)
- EDUC775: Authentic Assessments

Master of Science Drexel University
MS in Computer Science, College of Engineering
Philadelphia, Pennsylvania 2005-2008

- MS Thesis in Computer Science[2]: *A Service-Based Web Portal for Integrated Reverse Engineering and Program Comprehension*
- MS Thesis Advisor: Dr. Spiros Mancoridis
- Graduate Research Assistant for the College of Engineering under the Applied Communications and Information Networking (ACIN) Project, and for the Department of Computer Science under the Software Engineering Research Group (SERG)
- GPA: 3.86 on a 4.00 index

Bachelor of Science, Magna Cum Laude Drexel University
BS in Computer Science, College of Engineering
Philadelphia, Pennsylvania 2000-2005

- Undergraduate Research Assistant

[2] `https://www.billmongan.com/publication/msthesis`

- GPA: 3.79 on a 4.00 index
- Minor in Mathematics, College of Arts and Sciences
- Teaching Assistant for Systems Architecture I and II (CS281, CS282): 2003-2005

Undergraduate Track Elective Concentrations

- Operating Systems
- Compiler Theory
- Software Engineering

Teaching and Scholarly Development

Courses Taught

Selected course web pages are available at: https://www.billmongan.com/teaching

- **Ursinus College**
  - Instructor and Author for Programming for the World Around Us (CS170Q)
  - Instructor and Author for Human-Computer Interaction (CS474)
  - Instructor and Author for Database Design (CS377)
  - Instructor and Author for Principles of Programming Languages (CS374)
  - Instructor and Author for Computer Networks (CS475)
  - Instructor and co-Author for Introduction to Computer Science (CS173)
  - Instructor and Author for Web and Mobile Development (CS471 Special Topics)
- **Syracuse University**
  - Instructor and Course Coordinator for Advanced Data Structures and Algorithms (CSE674 Graduate Course)
- **University of Pennsylvania**
  - Instructor for Computer Systems II: Digital Systems Organization and Design (CIT595 Graduate Course)
- **Drexel University**
  - Instructor for Advanced Programming Tools and Techniques (CS265)
  - Instructor and Author for Programming Practicum (CS T280 Special Topics)
  - Instructor for Computer Science Foundations (CS520 Graduate Course)
  - Guest Lecturer for Collaborative Intelligent Radio Networks (CIRN) Design (ECE T680 Special Topics Graduate Course)
  - Instructor and co-Author for Computing and Informatics Design Project (CI106, CS280 Special Topics)
  - Instructor and co-Author for Computing and Informatics Design I (CI101)
  - Instructor and Author for "Making Apps" Honors Colloquium course for the university (HNRS202)
  - Instructor and Author for Processor Architecture and Analysis (CS352, CS480 Special Topics)
  - Instructor and Author for Web and Mobile Application Development (CS275, CS280, CS480 Special Topics, CS690 Special Topics Graduate Course)
  - Instructor for ESL097: the King Abdullah University of Science and Technology Introduction to C++ course for high school seniors for the Drexel University English Language Center (joint grant between Drexel University and the University of Pennsylvania)
  - Guest Lecturer for Operating Systems (CS543 Graduate Course)
  - Guest Lecturer for Computer Networks (CS544 Graduate Course)
  - Instructor and Guest Lecturer for Systems Architecture I and II (CS281, CS282)
  - Instructor for Computer Organization (ECEC490 Special Topics)
  - Instructor and Author for Systems Programming (CS283, ECEC353)
  - Instructor for Concurrent Programming (CS361, ECEC490 Special Topics)
  - Instructor for Processor Design (ECEC490 Special Topics)
  - Instructor and Author for Operating Systems (CS370, ECEC421, ECEC490 Special Topics)
  - Instructor for Computer Networks (CS472, ECEC357, ECEC490 Special Topics)
  - Instructor for Computer Structures (ECEC355)
  - Instructor and Author for Machine Organization (CS680 Special Topics Graduate Course)
  - Instructor for Internet Arch and Protocols (ECEC432)

- Instructor for Network Programming (ECEC433)
- Instructor and Author for Special Topics in Network Security (ECEC490 Special Topics)
- Instructor for Programming for Engineers (ECE203)

Independent Study Supervision

- **Ursinus College**
  - Independent Study Advisor: Research Independent Study in Malware Detection through Electromagnetic System Response (CS391)
  - Independent Study Advisor: Research Independent Study in RF Biomedical Analysis through Wearable Internet-of-Things Devices (2 students, CS394)
  - Independent Study Advisor: Research Independent Study in Moon Crater Classification (CS391)
  - Independent Study Advisor: Research Independent Study in RF Biomedical Analysis through Wearable Internet-of-Things Devices (2 students, CS394)
  - Independent Study Advisor: Research Independent Study in Moon Crater Classification (2 students, CS392)
  - Independent Study Advisor: Research Independent Study in Cross-Architecture Translation (CS392)
  - Independent Study Advisor: Research Independent Study in IoT Wearable Biosensors (CS391)
  - Independent Study Advisor: Research Independent Study in Dynamic Antenna Selection for Real-Time RF Sensing (CS391)
  - Independent Study Advisor: Research Independent Study in Cross-Architecture Translation (CS394)
  - Independent Study Advisor: Research Independent Study in Moon Crater Classification (CS391)
  - Independent Study Advisor: Research Independent Study in Deep Learning in Astrophysics (CS391)
- **Drexel University**
  - Independent Study Advisor: RF Cardio RSA Monitoring (CS I599 Graduate Course)
  - Independent Study Advisor: Machine Learning Research (CS I399)
  - Independent Study Advisor: Cardio-respiratory RF Processing (CS I299)
  - Independent Study Advisor: Advanced Computing Systems (CS I499)
  - Independent Study Advisor: Coordinated Radio Frequency Management (HNRS I399)
  - Independent Study Advisor: Advanced Operating Systems (CS I499)
  - Independent Study Advisor: RF Multisensor Fusion (CS I499)
  - Independent Study Advisor: ECE Magnetic Knitting Investigation (CS I799 Graduate Course)
  - Independent Study Advisor: RF Biomedical Sensing (CS I299)
  - Independent Study Advisor: RFID Multisensor Fusion (CS I499)
  - Independent Study Advisor: Forecasting on Medical Data (CS I499, CS I199)
  - Independent Study Advisor: Biomedical Signal Processing (CS I499)
  - Independent Study Advisor: Advanced Web Services and Mobile Application Development (CS I499)
  - Independent Study co-Advisor: Social Media Analytics (CS498)
  - Independent Study Advisor: Computing and Informatics Design Experience (CS498)
  - Independent Study Advisor: Big Data and Advanced Analytics (CS498)
  - Independent Study Advisor: Advanced Topics in Operating Systems (CS498)
  - Independent Study Advisor: Special Topics in Computer Architecture (CS498)
  - Independent Study Advisor: Advanced Topics in CPU Design (CS498, ECEC497)
  - Independent Study Advisor: Systems Architecture I (CS498)
  - Independent Study Advisor: Systems Architecture II (CS498)
  - Independent Study Advisor: Concurrent Programming (CS498)

Research Supervision

- **Ursinus College**

- Faculty Advisor to two undergraduate students in localization using outdoor wireless access points, 2020-2021
- Faculty Advisor to an undergraduate student in RESTful RFID interrogators for biomedical sensing on the Internet of Things, 2020-2021
- Founder and Principal Investigator of the Human-Machine Intelligent Systems Lab[3], 2020

- **Drexel University**
  - Faculty co-Advisor for student group in IEEE Computer Society Competition (COMPSOC) project: *RFID and BLE Enabled Smart Textile Wearable for COVID-19 Response*, 2020-2021; project received honorable mention and team won the IEEE Philadelphia Section Merrill Buckley Jr. Student Project Award
  - Faculty co-Advisor for senior design group in DVT symptom detection and mitigation, 2020-2021; group selected to represent the ECE Department at the College of Engineering Senior Design Competition and received third place at the College Competition
  - Faculty Mentor to 4 Vertically Integrated Projects (VIP) students in RF-based indoor localization, 2019-2020
  - Faculty Mentor to 3 VIP students in RF denoising through multisensor fusion with passive wearable IoT devices, 2019-2020
  - Faculty Mentor to 5 VIP students in adaptive respiratory event prediction using passive wearable RF-based smart garment devices, 2019-2021
  - Faculty co-Advisor to VIP student project in RF modulation classification, 2019-2020
  - External Stakeholder for senior design group project: VarIOT software framework for the Internet of Things, 2019-2020
  - Faculty Supervisor of Undergraduate Senior Thesis in Generative Adversarial Networks for Noise Reduction within RF-based Biomedical Sensors, 2019
  - Faculty Supervisor for 2 CS undergraduate students collaborating on an application project in Real-Time Visualization of RF-based Localization Systems, 2019
  - Faculty Mentor to 4 STAR undergraduate research students, and Co-Faculty Mentor to 5 additional STAR students, 2 VIP students, 2 RET high school teachers, and 1 Honors Option from CS370 Operating Systems, for Biomedical Textile Analytics, Sensor Fusion, and Energy Harvested Device Actuation through RF, 2019
  - Faculty Supervisor of an undergraduate research Co-Op in High Performance Computing to Parallelize Biomedical Imaging Machine Learning Processes for Digital Pathology, Summer 2019
  - Faculty Mentor to 6 VIP students, including STAR Scholars, for Biomedical Textile Analytics experiential and research education projects, 2018
  - Faculty supervisor of two undergraduate co-op students in Biomedical Analytics under CURE grant, 2017-2018; one of whom was named a 2018 Goldwater Scholar
  - Co-Faculty Mentor of Research Experiences for Teachers (RET) project in Biomedical Multisensor Data Fusion, 2016-2017 and 2017-2018, and 2020 Summer Workshop
  - Technical Editor for Ethical Case Studies for NSF EESE: The Ethics of Algorithms, 2016-2017
  - Faculty supervisor for two students under an NSF-Sponsored Research Experiences for Undergraduates (REU) Supplement, 2016
  - Co-Faculty Mentor of Students Tackling Advanced Research (STAR) freshman research student in Biomedical Multisensor Data Fusion
  - Co-Advisor for CS and ECE senior design group project: Biomedical smart actuation
  - Co-Advisor for CS, Mechanical Engineering, and ECE senior design group project: Actuation for Deep-Venous Thrombosis
  - Co-Advisor for ECE senior design group project: Software Infrastructure for Secure and Scalable Medical Sensor Networks, 2015-16
  - Co-Faculty Mentor of Students Tackling Advanced Research (STAR) freshman research student in Biomedical Smart Textile Analytics
  - Advisor for ECE senior design group project: Smart Fabric Monitoring Devices
  - Faculty co-Sponsor of Masters in Medical Science (MMS) Student Projects: *Maternity "SMART Fabric Bellyband" to Monitor Uterine Activity and Assess Fetal Well-Being* and

[3] `https://www.hmislab.org/`

Smart Onesie: Early Warning System for the Prevention of Sudden Infant Death Syndrome (SIDS)

- Co-Faculty Mentor of Students Tackling Advanced Research (STAR) freshman research students (2) in Distributed MapReduce with Hadoop
- Co-Founder of the Project Nebula Big Data Research Group
- Co-Faculty Mentor of Students Tackling Advanced Research (STAR) freshman research students (2) in Big Data and Analytics
- Faculty Mentor of Students Tackling Advanced Research (STAR) freshman research student group in Biomedical Systems
- Co-Advisor for CS senior design group project: REportal service integration
- Support external course projects in Circuit Design and Operating System Internals

Academic Supervision

- **Drexel University**
  - Co-Advisor to ECE Senior Design team in closed loop sensing and actuating systems for neonatal respiratory support, 2021-2022
  - Co-Advisor to ECE Senior Design team in IoT for Smart Campus Communities (VarIOT), 2021-2022
  - Member of PhD Candidacy Exam Committee for College of Engineering, 2019-2020
  - Member of PhD Thesis Advisory Committee for College of Arts and Sciences, 2018-2019
  - Member of PhD Candidacy Exam Committee for College of Engineering, 2018-2019
  - Faculty stakeholder to a CS senior design group project EtherFx for software integration, 2018-2019
  - External Stakeholder for Smart Home Senior Design Project
  - Technical co-Advisor for Which MBA 2016, sponsored by the Economist: "Kaspersky Lab Cyber Security Case Study"
  - Advisor for CS senior design group project: Scan Technologies
  - External Stakeholder for Flight Control and Failure Detection Senior Design Project
  - Faculty Advisor for DUCSTeach education outreach student organization, 2016-2017
  - Advisor for Life Insurance Big Data Senior Design Project
  - Co-Advisor of Freshman Design Project: Big Data and Analytics using the Mathforum at Drexel University
  - Faculty Advisor to the Math and Computer Science (MCS) Society, ACM undergraduate student chapter, 2012-2015
  - Faculty Advisor to the Arduino Developers at Drexel University
  - Founder of the Web Services User Group at Drexel University
  - Advisor for Senior Design Group: Dynamic Traffic Control System
  - Advisor for Freshman Design Group: Drexel Map Android Application
  - Co-Advisor for CS senior design group project: Classroom Application Media Center (CRAM)
  - Advisor for ECE senior design group project: Alzheimer's In-Home System
  - Advisor for CS senior design group project: Project Sekai - Experiencing the World
  - Faculty Advisor to an IEEE Systems Student Competition team
  - Advisor for ECE senior design group project: AutoCaddy (Autonomous Golf Cart)
  - Technical Advisor for CS senior design group project: ANFS (Advanced NFS)
  - Advisor for engineering freshman design group project: Interactive Android Battlefield Map
  - Co-Advisor for CS senior design group project: Visual VHDL (V2HDL)

Educational Initiatives

- **Ursinus College**
  - Instructor for WR Crigler Program and Summer Experience for Incoming First-Year Students on "Computing in Context," August, 2022
  - Guest Lecturer with Kelly Joyce in SOC313 (Sociology of Global Health) at Drexel University on Integrating Machine Learning and Sociology of Health under an award from the Colonial Academic Alliance, 2022

- Co-Facilitator (with Dr. Jeffrey L. Popyack) of Pixel Pandemonium student activity for National Computer Science Education Week in Philadelphia, 2021

- **Drexel University**
  - Instructor at CodeFest for HS Students at Philly CodeFest, May, 2019
  - Facilitator for Teaching Assistant Training in Inclusive Pedagogy, 2019
  - Piloted peer mentorship program in CI101 for approximately 80 freshman students with support from the Howard Hughes Medical Institute and the Drexel University College of Arts and Sciences, 2017-2018
  - Instructor for the Drexel University Computing Academy (DUCA) High School Summer Program and (formerly) the Pennsylvania Governor's School in Information, Society and Technology (PGSIST), 2008-2015
  - Student Teacher in Grade 8 Mathematics at Middle Years Alternative (MYA), 2007-2008
  - Guest Lecturer in AP Computer Science at Upper Darby High School, 2002-2004

Faculty Service Initiatives

Institutional Service

- **Ursinus College**
  - First-Year Academic Advisor, 2022-2023
  - Early Alert Focus Group Member, 2021-Present
  - Major Academic Advisor, 2022-Present
  - Member of the Midterm Academic Intervention Committee, 2022

- **Drexel University**
  - Panelist for First Year Exploratory Career Panel, 2019-2020
  - Chair of the CCI Faculty Promotion Committee, 2018-2019
  - Member of the CS Department Head Search Committee, 2018-2019
  - Member of the CCI Corporate Partners Program Committee, 2018-2019
  - Member of the Provost's DC Programming Summit, 2018
  - Cohort participant in Drexel Leaders 2020 professional development program, 2017
  - Member of the Faculty Senate Budget Planning and Development (BP&D) Committee, 2017-2018
  - Member of the Isaac L. Auerbach Innovation Award Committee, 2017-2018
  - Member of the Faculty Data and Assessment Committee, Chair of the Survey Baseline Data Group Subcommittee, 2017-2019
  - Faculty liaison for the Steinbright Career Development Center (SCDC) Employment Summary and Planner (ES&P) experiential curriculum integration focus groups for returning co-op students, 2017-2019
  - Member of the Steinbright Faculty Advisory Board, 2017-2019
  - Member of the University Program Alignment and Review (PAR) Committee, 2016-2019
  - Member of the CCI Women in Computing (WiC) initiative, 2016-2019
  - Member of the Center for the Advancement of STEM Teaching and Learning Excellence (CASTLE) network at Drexel University, 2016-2019; Honest Data Broker for experiential learning research, 2018-2019
  - Member of University Advising Implementation Committee (UAIC) on Student Major Changes across the University, 2016-2018
  - Member of the CCI Undergraduate Data Science Curriculum Committee, 2016-2018
  - Member of the Dean Search Committee for the College of Nursing and Health Professions (CNHP), representing the Faculty Senate, 2016-2017
  - Member of the Philly Codefest Advisory Board, 2016-2017
  - Member of the University Advising Steering Committee and Chair of Advising Infrastructure and Workflow Subcommittee, 2016-2017
  - Member of the CCI Faculty/Academic Council, 2015-2016
  - Member of the CCI College Curriculum Committee 2015-2019, co-Chair 2016-2017, 2018-2019
  - Member of the Academic Standing Committee, 2015-2019
  - Chair of the CCI Program Alignment and Review (PAR) Committee, 2015-2016, 2019-2020
  - Member (interim) of the CCI Finance and Strategic Planning Committee, 2015
  - Member (interim) of the CCI Bylaws Committee, 2015

- Member (interim) of the CCI Executive Council, 2015
- Acting Department Head August, 2015-January, 2016
- University Faculty Senator from CCI, 2014-2017
- Recording Secretary for the CCI Senate Caucus, 2014-2017
- Member of the CCI Computing Faculty Resources Committee, 2014-2016
- Member of the First-Year CCI Curriculum Committee, 2014-2015
- Member of the CCI Faculty Search Committee, 2013-2015
- Chair of CCI Computing Assessment and ABET Accreditation Committee, and Program Assessment Coordinator for all undergraduate programs and concentrations within Computer Science and Software Engineering, 2012-2016
- Member of the College of Engineering (COE) Assessment Executive Committee, 2012-2014
- Chair of the CS Department Assessment Committee, 2011-2019
- Member of the COE Assessment Committee, 2011-2012
- Member of the CS and SE Undergraduate Computing Curriculum Committee, 2009-2019, Chair 2015-2019
- Developed a new track and curriculum for the CS Architecture Track concentration, 2008-2011
- Chair of the CS Undergraduate Retention / Core Curriculum Committee, 2008-2014

Community Service Initiatives

- **Ursinus College**
  - Host of the digitalsignature.fm[4] podcast with support from the Pennsylvania Training and Technical Assistance Network (PaTTAN) and the Pennsylvania Department of Education, June, 2022
  - Focus Group Participant for the Philadelphia STEM Equity Collective on Expanding Access to STEM Career Pathways, May, 2022
  - Faculty Judge for Research Experiences for Undergraduates (REU) at Temple University, 2021, 2022
  - Judge for PA SEED Hackathon on Environmental Literacy at the Delaware County Intermediate Unit (DCIU), January, 2020
- **Drexel University**
  - Moderator for Center for the Integration of Research, Teaching and Learning (CIRTL) Conference in Philadelphia, PA, 2019
  - Faculty Judge for Research Experiences for Undergraduates (REU) at Temple University, 2019
  - Judge for Exelon STEM Academy for High School Girls, July, 2019
  - Judge for PA Governor's STEM Design Competition for K-12, Delaware Valley Region, 2019, 2020
  - Project Mentor and Judge for PA Department of Agriculture Seed K-12 projects on the Spotted Lanternfly with the Delaware County Intermediate Unit (DCIU), 2018
  - Member of the Delaware County Intermediate Unit (DCIU) STEM Education Council, 2017-2019
  - Mentor and Judge for Philly CodeFest Hackathon, 2015
  - Judge for Students Tackling Advanced Research (STAR) Undergraduate Research Program
  - Judge for Drexel University Research Day Competition

Referee Service

- **Ursinus College**
  - Reviewer for IEEE Journal of Biomedical and Health Informatics (JBHI), 2022
  - Reviewer for IEEE Signal Processing in Medicine and Biology (SPMB), 2020
  - Reviewer for IEEE Access Journal (three engagements), April, 2020 through May, 2020
- **Drexel University**
  - Reviewer for IEEE Sensors Journal, 2018
  - Reviewer for PLOS One Journal, 2018

[4] `https://www.digitalsignature.fm/`

- Reviewer for Elsevier Pervasive and Mobile Computing, 2015
- Reviewer for ACM SIGCSE, 2013
- Reviewer for ACM SIGCSE, 2012
- Reviewer for the International Advisory Committee for the International Joint Journal Conference in Engineering (IJJCE) 2009

Conference Service

- **Ursinus College**
  - Technical Program Chair for IEEE SPMB, 2022
  - Program Chair for IEEE SPMB, 2021
  - Session Chair for IEEE SPMB, 2021
- **Drexel University**
  - Session Chair for ACM SIGCSE, 2012

Textbook and Curriculum Review Service

- **Drexel University**
  - External Reviewer for CS401 Operating Systems Course, 2012
  - External Reviewer for CS402 Local Area Networks Course, 2012
  - External Reviewer for CS407 Network Apps Programming Course, 2012
  - External Reviewer for CS412 Mobile App Development, 2012
  - Reviewer for *Big Java Late Objects, 5th Edition*, 2012
  - Reviewer for *Computer Systems Architecture: Theme and Variations*, 2012
  - Reviewer for *Computer Systems: A Programmer's Perspective*, 2011
  - Reviewer for *Introduction to Internetworking, Its Security and Applications*, 2011

Research Funding and Scholarly Dissemination

Note: Undergraduate students are denoted by ∗, K-12 teachers are denoted by †, and the corresponding/presenting author(s) are underlined, where appropriate. Selected manuscripts are available at https://www.billmongan.com/publications

Patents

P1 A Wearable and Portable Smart Actuation Device for DVT Risk Mitigation: Deep Vein Thrombosis Prevention Device (DVT-PD). Hassan El Mghari*, Gregory Olsen*, Zikang Ling*, Srivasta Ganesh*, William Mongan, Vasil Pano, and Kapil Dandekar. US Patent Application No. 63/188,678 (provisional filed May 14, 2021).

Grant Funding

G16 NIH Smart and Connected Health (SCH) (R01EB029364): Smart and Connected Health for Newborn Ventilation (co-Principal Investigator with Kapil R. Dandekar, Principal Investigator, and Vineet Bhandari, Anup Das, Genevieve Dion, co-Principal Investigators), 2019-2023, $1,038,686.

G15 Internet of Things for Future Smart Campus and City (co-Principal Investigator with Kapil R. Dandekar, Principal Investigator, *et al*), 2019-2020; Drexel DARE Proposal, $250,000 (estimated).

G14 NSF CyberCorps Scholarship for Service (SfS) Site (DGE-1922202) for Undergraduate Education in Cyber Security (co-Principal Investigator with Brian Smith, Ayana Allen-Handy, Thomas Heverin, Michelle Rogers, Toni Sondergeld, co-Principal Investigators), 2019-2024, $3,999,970.

G13 NSF Computer and Network Systems (CNS): NeTS: Small (award number CNS-1816387): Architectures and Testbed for Functional Fabric RFID in the Internet of Things (co-Principal Investigator with Kapil R. Dandekar, Steven Weber, Genevieve Dion, co-Principal Investigators), 2018-2021, $499,647. REU Supplement to support two undergraduate students, $16,000 estimated, 2021.

G12 Arthur Vining Davis Foundations: Research on Experiential STEM Curricula for Authentic Learning Experiences (RESCALE) (co-Principal Investigator with Jennifer Stanford, Jason Silverman, Adam Fontecchio, Eric Brewe, co-Principal Investigators), 2018-2019, $274,998.

G11 Colonial Academic Alliance IN/CO: Tracking Experiential Learning Outcomes Across Three CAA Campuses (co-Principal Investigator with N. John DiNardo, Adam Fontecchio, Jennifer Stanford, *et al*, co-Principal Investigators), 2017-2019, $40,000.

G10 NSF Networking Technology and Systems (NeTS), **EA**rly-concept **G**rants for **E**xploratory **R**esearch (EAGER) (award number CNS-1738070): SC2: Team Dragon Radio (co-Principal Investigator with Kapil Dandekar, Principal Investigator, Steven Weber, Nagarajan Kandasamy, and Geoffrey Mainland, co-Principal Investigators), 2017, $99,978.

G9 Analytics on Real-Time Biometrics from Passive Wearable Smart-Garments (co-Principal Investigator with Adam Fontecchio, Principal Investigator); 2017-2018, Commonwealth Universal Research Enhancement (CURE) Formula Grant (SAP117558-014), $75,000. Drexel University Co-op Funding Award supplement of $7,250 to support undergraduate experiential learning in research.

G8 Integrated Design Research and Engineering for Advanced Manufacturing (iDREAM) (Senior Personnel with Genevieve Dion, *et al*), 2016; Drexel DARE Proposal, $250,000.

G7 Experiential Learning through the Cooperative Education Lifecycle (ExCEL) (Senior Personnel with Adam Fontecchio, Jason Silverman, Jennifer Stanford, Pramod Abichandani, Kapil Dandekar, David Goldberg, Antonios Kontsos, Suzanne Rocheleau, and Brian Smith), 2016; Drexel DARE Proposal, $250,000.

G6 Three Proosals for Student-Centered Spaces for Computing and Informatics. Bruce Char and William Mongan. Drexel University Steelcase Award, 2015.

G5 NSF/IEEE-TCPP Curriculum Initiative on Parallel and Distributed Computing – Core Topics for Undergraduates: Using BigData for Learning about a Slice of Parallel Computation in Several Courses (Co-Principal Investigator with with Bruce Char and Jeffrey Popyack), July, 2015-July, 2017. $2,500 faculty development award.

G4 NIH CPS: TTP Option: Synergy: Sensing, Processing, and Actuation of Biomedical Smart Textiles for Deep Venous Thrombosis Prevention (award number U01EB023035), March, 2016-March, 2020 (co-Principal Investigator with Kapil Dandekar, *et al*), $1,392,557 (estimated).

G3 NSF Partnerships For Innovation: Building Innovation Capacity (PFI:BIC) Grant Number IIP-1430212 on Biomedical Smart Textiles, 2014-2017 (Senior Personnel with Kapil Dandekar, *et al*, co-Principal Investigators), $799,577. REU Supplement to support two undergraduate students, $16,000 estimated, 2016.

G2 IBM Big Data and Analytics Education Grant, 2013 (Jeffrey L. Popyack and William M. Mongan, co-Principal Investigators), $10,000.

G1 NSF Research Experiences for Teachers (RET) in Engineering and Computer Science Site for Machine Learning, Big Data and CS Principles, National Science Foundation, DUE-0837665, July 2013-June 2016 (Senior Personnel and co-Director with Jeffrey L. Popyack, Principal Investigator, Mary Jo Grdina, co-Principal Investigator), $499,990.

Dissertation and Thesis

D2 William M. Mongan. **Predictive Analytics on Real-Time Biofeedback for Actionable Classification of Activity State**. PhD Dissertation, Drexel University, 2018.

D1 William M. Mongan. **A Service-Based Web Portal for Integrated Reverse Engineering and Program Comprehension**. MS Thesis, Drexel University, 2008.

Book Chapters

B2 Chelsea Amanatides, Stephen Hansen*, Ariana S. Levitt, Yuqiao Liu, Patrick O'Neill*, Damiano Patron, Robert Ross*, Daniel Schwartz, Jesse Stover*, Md Abu Saleh Tajin, Genevieve Dion, Adam K. Fontecchio, Vasil Pano, William M. Mongan, and Kapil R. Dandekar. **Wearable Smart Garment Devices for Passive Biomedical Monitoring**. *Biomedical Signal Processing*, Volume 2, Chapter 4. Iyad Obeid, Ivan Selesnick, and Joseph Picone, eds, Springer: April, 2021.

B1 Duc N. Nguyen, Kyle Usbeck, William M. Mongan, Christopher T. Cannon, Robert N. Lass, Jeff Salvage, William C. Regli, Israel Mayk, Todd Urness. **A Methodology for Developing an Agent Systems Reference Architecture**. *Agent-Oriented Software Engineering XI*, pp. 177-188. Danny Weyns, Marie-Pierre Gleizes, eds, Springer Berlin Heidelberg: 2011.

Archival Journal Publications

J7 Ankita Paul, Md Abu Saleh Tajin, Anup Das, William M. Mongan, and Kapil R. Dandekar. **Energy-Efficient Respiratory Anomaly Detection in Premature Newborn Infants**. *MDPI Electronics Journal Special Issue: Neuromorphic Sensing and Computing Systems, 2022.*

J6 Md Abu Saleh Tajin, Marko Jacovic, Genevieve Dion, William M. Mongan, and Kapil R. Dandekar. **UHF RFID Channel Emulation Testbed for Wireless IoT Systems**. *IEEE Access Journal, 2021.*

J5 Md Abu Saleh Tajin, William M. Mongan, and Kapil R. Dandekar. **Passive RFID-based Diaper Moisture Sensor**. *IEEE Sensors Journal, October 2020.*

J4 Sayandeep Acharya, William M. Mongan, Ilhaan Rasheed, Yuqiao Liu, Endla Anday, Genevieve Dion, Adam Fontecchio, Timothy Kurzweg, and Kapil R. Dandekar. **Ensemble Learning Approach via Kalman Filtering for a Passive Wearable Respiratory Monitor**. *IEEE Transactions of Biomedical and Health Informatics, May 2019.*

J3 Damiano Patron, William Mongan, Timothy Kurzweg, Adam Fontecchio, Genevieve Dion, Endla Anday, and Kapil R. Dandekar. **On the Use of Knitted Antennas and Inductively Coupled RFID Tags for Wearable Applications**. *IEEE Transactions on Biomedical Circuits and Systems, January 2016.*

J2 William Regli, Israel Mayk, Christopher Cannon, Joseph Kopena, Robert Lass and William M. Mongan. **Development and Specification of a Reference Architecture for Agent-Based Systems**. Published in the *IEEE Transactions on Human-Machine Systems, 2013.*

J1 William Regli, Israel Mayk, Christopher J. Dugan, Joseph B. Kopena, Robert N. Lass, Pragnesh Jay Modi, William M. Mongan, Jeff K. Salvage and Evan A. Sultanik. **Development and Specification of a Reference Model for Agent-Based Systems**. Published in *IEEE Transactions on Systems, Man, and Cybernetics, September 2009.*

Conference and Workshop Proceedings Publications

C18 Robert Ross*, William M. Mongan, Patrick O'Neill*, Ilhaan Rasheed, Adam Fontecchio, Genevieve Dion, and Kapil R. Dandekar. **An Adaptively Parameterized Algorithm Estimating Respiratory Rate from a Passive Wearable RFID Smart Garment**. *IEEE Symposium on Mobile, Wearable and Ubiquitous Computing at the IEEE Conference on Computers, Software, and Applications (COMPSAC), July, 2021* **Acceptance Rate 27%**

C17 Md Abu Saleh Tajin, Marko Jacovic, Xaime Rivas Rey, William M. Mongan, and Kapil R. Dandekar. **Channel Emulation for the Characterization of Wearable RFID Antennas**. *21st Annual IEEE Wireless and Microwave Technology Conference (WAMICON 2020-2021), April, 2021.*

C16 Stephen Hansen*, Daniel Schwartz, Jesse Stover*, Md Abu Saleh Tajin, William M. Mongan, and Kapil R. Dandekar. **Fusion Learning on Multiple-Tag RFID Measurements for Respiratory Rate Monitoring**. *IEEE International Conference on Bioinformatics and Biomedical Engineering (BIBE), October, 2020.*

C15 Patrick O'Neill*, William M. Mongan, Robert Ross*, Sayandeep Acharya, Adam K. Fontecchio, and Kapil R. Dandekar. **An Adaptive Search Algorithm for Detecting Respiratory Artifacts Using a Wireless Passive Wearable Device**. *IEEE Signal Processing in Medicine and Biology (SPMB), December, 2019.*

C14 Austin Gentry, William M. Mongan, Brent Lee*, Owen Montgomery, and Kapil Dandekar. **Activity Segmentation Using Wearable Sensors for DVT/PE Risk Detection**. *The First IEEE International Workshop on Integrated Smart Healthcare (WISH 2019) at the IEEE Conference on Computers, Software, and Applications (COMPSAC), July, 2019.*

C13 William M. Mongan, Robert Ross*, Ilhaan Rasheed, Yuqiao Liu, Khyati Ved, Endla Anday, Kapil Dandekar, Genevieve Dion, Timothy Kurzweg, and Adam Fontecchio. **Data Fusion of Single-Tag RFID Measurements for Respiratory Rate Monitoring**. *IEEE Signal Processing in Medicine and Biology (SPMB) 2017, December, 2017.*

C12 Shrenik A. Vora, William M. Mongan, Endla K. Anday, Kapil R. Dandekar, Genevieve Dion, Adam K. Fontecchio, and Timothy P. Kurzweg. **On Implementing an Unconventional Infant Vital Signs Monitor with Passive RFID Tags**. *IEEE International Conference on RFID, 2017, May, 2017.*

C11 William Mongan, Ilhaan Rasheed, Khyati Ved, Shrenik Vora, Kapil Dandekar, Genevieve Dion, Timothy Kurzweg, and Adam Fontecchio. **On the Use of Radio Frequency Identification for Continuous Biomedical Monitoring**. *ACM/IEEE International Conference on Internet-of-Things Design and Implementation (IoTDI) 2017, April, 2017.*

C10 William M. Mongan, Ilhaan Rasheed, Khyati Ved, Ariana Levitt, Endla Anday, Kapil Dandekar, Genevieve Dion, Timothy Kurzweg, and Adam Fontecchio. **Real-Time Detection of Apnea via Signal Processing of Time-Series Properties of RFID-Based Smart Garments**. *IEEE Signal Processing in Medicine and Biology (SPMB) 2016, December, 2016.*

C9 William Mongan, Endla Anday, Genevieve Dion, Adam Fontecchio, Kelly Joyce, Tim Kurzweg, Yuqiao Liu, Owen Montgomery, Ilhaan Rasheed, Cem Sahin, Shrenik Vora, and Kapil Dandekar. **A Multi-Disciplinary Framework for Continuous Biomedical Monitoring Using Low-Power Passive RFID-based Wireless Wearable Sensors**. Proceedings of the *IEEE Smart Systems Workshop 2016, May, 2016.*

C8 Shrenik Vora, William Mongan, Kapil Dandekar, Adam Fontecchio, and Tim Kurzweg. **Wireless Heart and Respiration Monitoring for Infants through Passive RFID Tags**. *International Conference on Biomedical and Health Informatics (BHI), February, 2016.*

C7 Duc N. Nguyen, Robert N. Lass, Kyle Usbeck, William M. Mongan, Christopher T. Cannon, William C. Regli, Israel Mayk and Todd Urness. **Developing an Agent Systems Reference Architecture**. Published in the *Proceedings of the* 11^{th} *International Workshop on Agent Oriented Software Engineering, May 2010.*

C6 William M. Mongan and William C. Regli. **A Cyber-Infrastructure for Supporting K-12 Engineering Education through Robotics**. Published in *The Proceedings of the Association for the Advancement of Artificial Intelligence (AAAI) Education Track 2008.*

C5 William M. Mongan, Maxim Shevertalov, Spiros Mancoridis. **Re-engineering a Reverse Engineering Portal to a Distributed SOA**. Published in *IEEE Proceedings of the* 16^{th} *International Conference on Program Comprehension (ICPC) 2008.*

C4 Quincy Brown, William Mongan, Elaine Garbarine, Dara Kusic, Eli Fromm, Adam Fontecchio. **Computer Aided Instruction as a Vehicle for Problem Solving: Scratch Programming Environment in the Middle Years Classroom**. Published in *Proceedings of the American Society for Engineering Education (ASEE) K-12 Track 2008.*

C3 William M. Mongan, Christopher J. Dugan, Robert N. Lass, Andrew K. Hight*, Jeff Salvage, William C. Regli, Pragnesh J. Modi. **Dynamic Analysis of Agent Frameworks in Support of a Multiagent Systems Reference Model**. Published in *IADIS Proceedings of the International Conference Intelligent Systems and Agents (ISA) 2007.*

C2 Christopher J. Dugan, Pragnesh Jay Modi, Joseph Kopena, William M. Mongan, William C. Regli, Israel Mayk. **A Reference Model for Agent-Based Command and Control**

Systems. Published in *Proceedings of the* 25^{th} *Army Science Conference 2006*. **Acceptance Rate 14%**

C1 Pragnesh Jay Modi, Spiros Mancoridis, William M. Mongan, William Regli, Israel Mayk. **Towards a Reference Model for Intelligent Agent Systems**. Published in *Proceedings of the International Conference of Autonomous Agents and Multiagent Systems (AAMAS) 2006*.

Abstracts and Posters

A14 Ankita Paul, Md Abu Saleh Tajin, William M. Mongan, Anup Das, and Kapil R. Dandekar. **Energy Efficient Detection of Respiratory Anomaly using Spiking Neural Networks**. *IBM-IEEE AI Compute Symposium (AICS 2021)*. October, 2021. **Best Poster Award Winner**

A13 **REThink CS @ Drexel: Bridging Connections in Philadelphia with a Research Experiences for Teachers Site**. *NSF EEC Grantees Conference with Jeffrey L. Popyack*. Washington, DC. October, 2019.

A12 **Post-It Pandemonium: Teaching Image Representation and Compression with an "Unplugged" Activity**. *ACM SIGCSE 2019 Nifty Assignment with Jeffrey L. Popyack*. Minneapolis, MN. February, 2019.

A11 **A Wearable Biomedical Monitoring System Enabled by the Internet-of-Things**. *NSF Connections in Smart Health (CSH) Workshop with Kapil R. Dandekar, Genevieve Dion, Adam Fontecchio, Timothy Kurzweg*. Charlottesville, VA. September, 2018.

A10 **MapReduce Parallelism across the Curriculum: an Interim Report**. *8th NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar-18) with Bruce Char and Jeffrey Popyack*. Vancouver, BC, Canada. May, 2018.

A9 **Using BigData for Learning about a Slice of Parallel Computation in Several Courses**. *NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar-16) Poster with Bruce Char and Jeffrey Popyack*. Chicago, IL. May, 2016.

A8 **Pixels, Post-It's and CS Principles**. *SIGCSE 2016 Poster with Jeffrey L. Popyack*. Memphis, TN. March, 2016.

A7 **Statistical Analytics of Wearable Passive RFID-based Biomedical Textile Monitors for Real-Time State Classification**. *IEEE Signal Processing in Medicine and Biology (SPMB) Symposium Poster with Kapil Dandekar, Genevieve Dion, Tim Kurzweg, and Adam Fontecchio*. Philadelphia, PA. December, 2015.

A6 **Raspberry HadooPI: A Low-Cost, Hands-On Laboratory in Big Data and Analytics**. *SIGCSE 2015 Poster with Ken Fox* and Jeffrey L. Popyack*. Kansas City, MO, March, 2015 and *Drexel University Research Day 2015*.

A5 **A Software Framework for Monitoring and Performing Analytics on Real Time Medical Device Data**. *American Society for Engineering Education Poster with Rachel M. Goeken*, Kapil Dandekar, Timothy Kurzweg, Genevieve Dion, and Adam K. Fontecchio*. Swarthmore, PA. November, 2014. **Runner-Up for Best Poster**

A4 **Maternity Smart Fabric Bellyband to Monitor Uterine Activity and Assess Fetal Well-Being**. *Wearable Technology in Healthcare Society (WATCH) Conference with Kapil Dandekar, Genevieve Dion, Adam Fontecchio, Timothy Kurzweg, and Owen Montgomery, MD*. Indianapolis, IN. July, 2014.

A3 **An Integrated Introduction to Network Protocols and Cryptography to High School Students**. *Poster Presentation at ACM SIGCSE 2012, Raleigh, NC*. March, 2012.

A2 **GK-12: Engineering as a Contextual Vehicle for Science and Mathematics Education Poster**. *2007 NSF GK-12 Annual Meeting, Washington DC* and *2007 Drexel Research (RISC) Day*.

A1 **REportal: A Web-Based Reverse Engineering Portal**. *2003 Drexel University Research Day**.

Technical Reports

R3 Israel Mayk and William C. Regli, eds; William M. Mongan, *et al.* **Agent Systems Reference Architecture**. Published 2008.

R2 Israel Mayk and William C. Regli, eds; William M. Mongan, *et al.* **Agent Systems Reference Model**. Published 2006.

R1 C. Liao, S. Mancoridis, W. Mongan*. **REportal: A Reverse Engineering Portal**. Drexel University Technical Report. Published 2003.

Invited Talks

T32 **Equitable CS Education for Broader Workforce Prepartaion through Design Thinking**. *CS4All Summit Session at PaTTAN.* June, 2022.

T31 **Introducing Computing Concepts through Multidisciplinary No-Code and Low-Code Platforms**. *CS4All Lunch and Learn Booth at PaTTAN with Jeffrey L. Popyack.* June, 2022.

T30 **Broadening Computer Science Principles across the Curriculum and in Extracurricular Activities: Computing Pathways for K-12 Students**. *CS4All Summit Panel Moderator at PaTTAN with John Dougherty, Jamie Payton, Tammy Pirmann, and Jeffrey L. Popyack.* June, 2022.

T29 **Professional Development to Highlight Pathways and Expand Access to the Computing Workforce from K-20**. *PaTTAN Remake Learning Days Monthly Meetup Moderator.* Harrisburg, PA. May, 2022.

T28 **Replit in the Classroom**. *CSTA>>Philly Spring Symposium.* Philadelphia, PA. March, 2021.

T27 **Teaching AP Computer Science A**. *Professional Development Workshop with the Delaware Department of Education.* Newark, DE. September, 2020.

T26 **Grades 7-12 CS Bootcamp**. *2020 Pennsylvania Training and Technical Assistance Network (PATTAN) under a PASmart grant from the Pennsylvania Department of Education.* Harrisburg, PA. June, 2020.

T25 **Using Github Classroom**. *CSTA>>Philly Spring Symposium.* Philadelphia, PA. April, 2020.

T24 **Post-It Pandemonium: Teaching Image Representation and Compression with an "Unplugged" Activity**. *CS4Philly Workshop Activity with Jeffrey L. Popyack.* Philadelphia, PA. December, 2018.

T23 **Contextualizing Principles of Computer Science**. *CASTLE Pedagogical Happy Hour.* Philadelphia, PA. May, 2018.

T22 **CASTLE Summit at Drexel University**. *Faculty Panelist.* Philadelphia, PA. May, 2018.

T21 **National Council of Women in Information Technology (NCWIT)**, *Invited Faculty.* Tucscon, AZ. May, 2017.

T20 **Integrating Active Learning in the STEM Classroom (Inaugural Event)**. *Pedagogical Readiness Oversight for Future Educators in STEM Subjects (PROFESS) at Drexel University.* Philadelphia, PA. April, 2017.

T19 **A Panel Discussion on Computer Science Education**. *Computer Science Teachers Association Fall Symposium.* Villanova, PA. November, 2016.

T18 **Wearable Technology Advances Health for Mothers and Babies**. *Yale Tech Summit presentation with Owen Montgomery.* New Haven, CT. October, 2016. Also presented to Teva in Frazer, PA, November, 2016.

T17 **Wearable Smart Textiles Based on Programmable and Automated Knitting Technology for Biomedical and Sensor Actuation Applications**. *BIO International Convention with Kapil R. Dandekar, Genevieve Dion, Adam Fontecchio, Tim Kurzweg, Owen Montgomery, V.K. Narayan.* June, 2015.

T16 **Feedback at Scale - Automatically Generated Feedback for CS Student Work: Best Practices**. *SIGCSE 2015 Birds-of-a-Feather Session with Bruce W. Char, Jeffrey L. Popyack, and Jeremy Johnson.* Kansas City, MO. March, 2015.

T15 **Marconi: The Master of Wireless**. *Bellyband Demonstration at Drexel University.* Philadelphia, PA. October, 2014.

T14 **Big Data, Big Deal; Welcome to the Twitterverse**. *Reboot, REThink, Refresh with Jeff Popyack.* July, 2014.

T13 **Big Data is Everywhere: Bridging Computing Disciplines and Society**. *Webinar for Drexel University with Jeff Popyack.* June, 2014 and January, 2015.

T12 **What Is/Are CS Principles?** *Philadelphia Science Festival with Jeff Popyack and Omar Ali, School District of Philadelphia.* April, 2014.

T11 **Learning Real-World Skills while Majoring in Computer Science**. *GETT: Girls Exploring Tomorrow's Technology with Jeff Popyack, Suzanne Hanbicki†, and Hannah Pinkos*.* April, 2014.

T10 **Internet Protocols and Cryptography**. *Reboot Renew REThink Workshop at Drexel University.* July, 2013.

T9 **Mobile Application Development with Web Services**. *Google CS4HS Workshop at the University of Pennsylvania.* August, 2012.

T8 **Networking Applications, Protocols, and Cryptography**. *Computing Tapestry Workshop at the University of Pennsylvania.* July, 2012.

T7 **Linux Kernel Vulnerabilities**. *Drexel University Math and Computer Science (MCS) Society Talk.* March, 2012.

T6 **Networking Applications, Protocols, and Cryptography with Java**. *Google CS4HS Workshop at the University of Pennsylvania.* August, 2011.

T5 **Version Control Systems**. *Drexel University Math and Computer Science (MCS) Society Talk.* July, 2010.

T4 **Certification and standards for computing education in Pennsylvania**. Invited Panelist with Dougherty, J.P., Griffin, J., Pirmann, T., and Powell, R. Panel presentation submitted to *The Twenty-fifth Annual Consortium for Computing Science in Colleges (CCSC) Eastern Conference*, Villanova University, Villanova, PA. October 30 - 31, 2009.

T3 **How the PC Starts its Day: From Boot Code to Boot Viruses**. *Drexel University Math and Computer Science (MCS) Society Talk.* February, 2009.

T2 **Circuit Design with Breadboards, Microcontrollers, and FPGAs**. *Drexel University Math and Computer Science (MCS) Society Talk.* November, 2008.

T1 **Computer Organization Workshop**. *The Pennsylvania Governor's Schools of Excellence: Information, Society & Technology.* Summer, 2008.

Media Coverage

M3 How the Broad Street Run times thousands of runners at once[5]. The Philadelphia Inquirer, April 26, 2022.

M2 Bellyband and Exoskin Glove featured at Chemical Heritage Foundation, October, 2016.

M1 Science Nation Coverage of Biomedical Smart Textiles: "These Smart Threads Could Save Lives"[6], September, 2016.

[5] https://www.inquirer.com/health/broad-street-run-2022-races-in-philadelphia-20220426.html
[6] https://nsf.gov/news/mmg/mmg_disp.jsp?med_id=132437&from=

Honors, Certifications, and Professional Membership

Honors and Awards

- Colonial Academic Alliance Award for Sociology of Health and Wellness with Kelly Joyce, 2021-2022, $4,000.
- Drexel College of Computing and Informatics Faculty Leadership Award, 2019 (Inaugural College Recipient)
- Drexel Center for the Advancement of STEM Teaching and Learning Excellence (CASTLE) Instructor of the Week, February, 2018
- Drexel College of Computing and Informatics (CCI) Teaching Excellence Award, 2014 (Inaugural Departmental Recipient)
- Drexel Dean's Fellow September, 2005 through September, 2008
- Member of the Drexel University Upsilon Pi Epsilon International Honor Society for the Computing Sciences since June, 2004; elected Treasurer August, 2006
- Member of the Golden Key International Honor Society January, 2001
- Member of the National Society of Collegiate Scholars January, 2001
- Upper Darby School District Service Award, 2000

Professional Membership

- Member of the American Radio Relay League (ARRL), 2017-Present
- Member of the International Advisory Committee for the International Joint Journal Conference in Engineering (IJJCE) 2009
- Fellow of the Association of Computer Electronics and Electrical Engineers (ACEEE) since January, 2009
- Member of the Experimental Aircraft Association (EAA240) from May, 2008 through May, 2009
- Member of the National Council of Teachers of Mathematics (NCTM) from March, 2008 through March, 2009
- Student Member of the American Institute of Aeronautics and Astronautics (AIAA) from October, 2006 through September, 2008
- Senior Member of the Institute of Electrical and Electronics Engineers (IEEE) from 2005 through January, 2011, and since August, 2014 (elevated to Senior Member in October, 2018)
  - Member of the IEEE Computer Society
  - Member of the IEEE Signal Processing Society
  - Member of the IEEE Circuits and Systems Society
  - Member of the IEEE Information Theory Society
- Senior Member of the Association for Computing Machinery (ACM) since May, 2004 (elevated to Senior Member in March, 2012)
  - Member of the ACM Special Interest Group in Computer Science Education (SIGCSE)
  - Member of the ACM Computer Science Teachers Association (CSTA)
- Member of the Aircraft Owners and Pilots Association (AOPA) since May, 2004

Professional, Safety, and Miscellaneous Certifications

- Vermont State Bartending License (Alcohol Safety Course), 2019
- FAA Unmanned Aerial Vehicle (UAV) Certificate FA3TN3LPL4, 2017
- Pennsylvania Boater Safety Certification, 2017
- FCC Amateur Radio License with callsign W1CLK (Technician: 2017, General: 2017, Amateur Extra: 2019)
- FCC Restricted Radiotelephone Operator (RR) License, 2016
- Bioraft Laboratory Safety Certification 2016-2020
  - Electrical Safety
  - Emergency Response
  - Fire and Life Safety
  - Hazard Communication
  - Hazardous Waste Management
  - Personal Protection Equipment
  - Respiratory Protection
- Human Subjects Protection Certification 2015-Present
  - Medical Good Clinical Practice
  - Medical Responsible Conduct of Research

  - Social and Behavioral Conflict of Interest
  - Medical Human Subjects Research
  - Social and Behavioral Human Subjects Research
  - Health Information Privacy and Security - Medical, Biomedical, Nursing, Public Health, and Psychology
  - HIPAA and Medical Research
  - Responsible Conduct of Research for Engineers
- Pennsylvania Instructional I Teaching Certificate earned September, 2008
  - Grades 7-12 Mathematics Subject Area earned January, 2007
  - Grades 7-12 Computer Science Subject Area earned July, 2021
- United States Department of Defense Antiterrorism Level 1 Awareness Training
- Security clearance at the level of SECRET granted April, 2006
- FAA Certificated Private Pilot, 2005-Present
  - Instrument Rating (Instrument Airplane) March, 2006
  - Complex Endorsement (Airplane Single Engine Land), September, 2005
  - Private Pilot (Airplane Single Engine Land) May, 2005

Selected non-Faculty Professional Experience

Educational Consultant — Delaware Department of Education
Newark, DE — 2020-2020

- Developed workshop on teaching the AP Computer Science A course with a team of teachers
- Presented the AP Computer Science A workshop at Partner4CS at the University of Delaware in September, 2020

Educational Consultant — Pennsylvania Training and Technical Assistance Network (PATTAN)
Harrisburg, PA — 2020-Present

- Developed Grades 7-12 curriculum for Computer Science teacher preparation under the new Computer Science state teaching certification under a PASmart grant from the Pennsylvania Department of Education in partnership with the Lancaster-Lebanon Intermediate Unit
- Hosted Remake Learning Days Monthly Meetup as a Panel Moderator in May, 2022
- Hosted Panel at CS4AllPA Summit in June, 2022
- Developed educational materials and a podcast series on computing career pathways and try-at-home activities

Visiting Research Scientist — Drexel University College of Engineering
Philadelphia, Pennsylvania — 2019-Present

- Co-Advised research students on funded research projects in signal processing and machine learning on biomedical smart textiles

Research Assistant — Drexel University
Philadelphia, Pennsylvania — 2001-2008

- Researched projects and tools for reverse engineering, software maintenance and program understanding with the Software Engineering Research Group (SERG)
- Developed REportal: A Web Based Reverse Engineering Portal and re-engineered it into a maintainable, distributed Service Oriented Architecture
- Developed Abstract Software Cluster Visualization tool using XML

Technical Writer and Research Assistant — Drexel University ACIN Program
Camden, New Jersey — 2005-2008

- Performed research, development and technical writing related to reverse engineering and software architecture with US Army CERDEC RDECOM C2D under the Applied Communications and Information Networking (ACIN) Project
- Served as a contributing member of the US Army Intelligent Agent (IA) sub-IPT group
- Researched tools and best practices to investigate software engineering and reverse engineering methods for distributed, multi-agent systems
- Co-authored the Agent Systems Reference Model (ASRM) and the Agent Systems Reference

Architecture (ASRA)

Application Developer and IT Manager — David M. Banet and Associates
Exton, Pennsylvania — 2001-2005

- Developed customized software solutions to simplify business tasks, including:
  - Payroll integration system to compute payroll benefit deductions and integrate with client proprietary payroll systems
  - XML based electronic audit system
  - Specialized web-based services for clients
- Built and maintained network domain and all associated servers, workstations and integrated business tools

IT Consultant — Consulting Group, Inc.
Malvern, Pennsylvania — 2004

- Served as IT technician for the office during Open Enrollment period
- Assisted in the maintenance of network domain and associated workstations
- Provided technical support in troubleshooting workstations and servers

Volunteer — Chester-Wallingford Red Cross
Chester, Pennsylvania — 2003

- Replaced token-ring computer network with 10/100 ethernet and internet connectivity on a volunteer basis

Instructional Technology Consultant — Upper Darby School District
Upper Darby, Pennsylvania — 1998-2003

- Designed and managed web site for Upper Darby School District
- Created Upper Darby School District Instructional Intranet (RoyalNet) and developed systems to automate content management
- Presented Act 48 training workshops on Filemaker Pro and Dreamweaver for staff, teachers and principals, to maintain and add value to the production of the above district-wide systems
- Interviewed for an Upper Darby School Board seat in November, 2000
- Served on the Upper Darby Technology and Grant Writing Committee under the school board in March, 2001

Application Developer and Consultant — StarComm Development, Inc.
Upper Darby, Pennsylvania — 1999-2002

- Developed and maintained dynamic, database-driven internet applications (ASPs) for clients
- Provided development support on FileMaker programming and educational projects for various companies and educational institutions
- Assisted in the development process and provided technical support for Drexel University's online college application system

Web Application Developer — Boss Entertainment
King of Prussia, Pennsylvania — 2001

- Designed, developed, managed and maintained e-Commerce web site
- Supported development of golf course management system

Script Reviewer — Bergwall Productions
Kennett Square, Pennsylvania — 1998-1999

- Read, reviewed, and edited scripts for Bergwall Productions instructional computer videos