Alan Marchiori

May 16, 2025

Lewisburg, PA 17837
(570)238-7891

amm042@bucknell.edu
https://bison.link/alan
https://github.com/amm042

Professional Preparation

Colorado School of Mines	Mathematical & Computer Sciences	Ph.D.	2011
Purdue University	Computer Engineering	M.S.	2002
Lafayette College	Electrical and Computer Engineering	B.S.	2000

Appointments

2022 -	**Associate Professor** Computer Science (**chair**) and Electrical & Computer Engineering.
2021 - 2022	**Associate Professor** of Computer Science and Electrical & Computer Engineering.
2020 - 2021	**Associate Professor** of Computer Science, Bucknell University.
2013 - 2020	**Assistant Professor** of Computer Science, Bucknell University.
2011 - 2013	**Senior Research Scientist**, United Technologies Research Center.
2009 - 2010	**Graduate Intern**, Residential Buildings, National Renewable Energy Laboratory.
2007 - 2011	**Graduate Research Assistant**, Colorado School of Mines.
2006 - 2007	**Software Engineer**, MEI Group Inc.
2004 - 2006	**Design Engineer**, FreedomPay, Inc.
2002 - 2004	**Design Engineer**, TESCO Engineering.
2000 - 2002	**Research Assistant**, Purdue University.

Grants Awarded and Fellowships **(external sources in *italics*)**

GR1 - Alan Marchiori, Xin Faculty Fellowship in Computer Science & Engineering, $12,000, September 1, 2025 - August 31, 2027.

GR2 - Alan Marchiori, Alexander Chang, "Evaluation of Screen-Printed Electrodes for Point-of-Care Urinary Calcium Detection," Bucknell-Geisinger Research Initiative Phase 1 Award, $20,000, May 2025.

GR3 - Ryan Koes, Katsuyuki Wakabayashi, Alan Marchiori, "Machine Learning Enhanced Electronic Tongue for Unbiased Analysis of Coffee Characteristics," Bucknell Reed-Garman Engineering Entrepreneurship Award, $5,500, 2024.

GR4 - Alan Marchiori, "A Continuous Turbidity Monitoring Network," Bucknell College of Engineering Research Restart Grants, $5,000, 2022-2023.

GR5 - Tsugunobu Miyake ('25), and Alan Marchiori, "Integrating spectrophotometry and turbidity for low-cost water quality monitoring," Bucknell Program for Undergraduate Research, $4,250, Summer 2022.

GR6 - William Jackson ('24), Stweart Thomas, Alan Marchiori, and Elizabeth Capaldi, "Development and Implementation of a Sensor to Track Mussels," Bucknell Program for Undergraduate Research, $4,250, Summer 2022.

GR7 - Ding (Devon) Zhang ('23), and Alan Marchiori, "Image Processing and Analysis of the Turbidity of Water," Bucknell Program for Undergraduate Research, $4,250, Summer 2022.

GR8 - Michael Santamaria and Alan Marchiori, "Foundation for a Community-Based Smarty City," Bucknell Computer Science and Engineering College Funds, $3,000, Summer 2019.

GR9 - Alan Marchiori, Joshua Stough, and Christopher Dancy II, "High Performance Computing and Artificial Intelligence Lab," Bucknell Engineering Capital Budget Request, $91,500, Spring 2019.

GR10 - Haipu Sun and Alan Marchiori, "Enabling Network Coverage of the Internet of Things," Bucknell Program for Undergraduate Research, $3,500, Summer 2018.

GR11 - Benjamin R. Hayes and Alan Marchiori, "HydroSense: A Low-Cost, Open-Source, Hydroclimatic Monitoring System," *Susquehanna River Heartland Coalition for Environmental Studies*, $7,100, Summer 2015.

GR12 - Alan Marchiori and Keyi Zhang, "Lightweight Environment of Agents for Full Lifecycle Support of Streaming Data Applications," Bucknell Program for Undergraduate Research, $3,500, Summer 2015.

GR13 - Alan Marchiori, "Wireless Sensor Networks," Bucknell KEEN Curriculum Development, $2,000, Spring 2014.

GR14 - Alan Marchiori and Stefano Cobelli, "Campus Energy Monitoring Project," Bucknell Program for Undergraduate Research, $3,500, Summer 2014.

GR15 - Alan Marchiori and Keyi Zhang, "Distributed Datastore for Robust and Scalable Sensing using Low Cost Nodes," Bucknell Computer Science Department, $3,000. Summer 2014.

GR16 - Alan Marchiori and Gilbert Kim, "Watershed Monitoring Network Using Wireless Microcontrollers and Sensor Nodes Organized in a Mesh Topology," *Susquehanna River Heartland Coalition for Environmental Studies*, $5,000. Summer 2014.

Refereed Publications **(Bucknell students underlined)**

RP1 - Alan Marchiori, "WIP: Teaching Computer Architecture Using a Python Hardware Description Language," To appear in the proceedings of the 2025 ASEE Annual Conference, Montreal, Quebec, Canada, 2025.

RP2 - Tsugunobu Miyake and Alan Marchiori, "A Continuous Turbidity Meter with Synchronous Detection," 2024 IEEE Applied Sensing Conference (APSCON), Goa, India, 2024, pp. 1-4, https://doi.org/10.1109/APSCON60364.2024.10465805.

RP3 - Lucille E. Cullen, Alan Marchiori, David Rovnyak, "Revisiting aliasing noise to build more robust sparsity in nonuniform sampling 2D-NMR," Magnetic Resonance in Chemistry, 2023, https://doi.org/10.1002/mrc.5340.

RP4 - William Jackson, Alan Marchiori, Stewart J. Thomas, Elizabeth Capaldi, Sean Reese, "Verifying IMU Suitability for Recognition of Freshwater Mussel Behaviors," Proceedings of the 2023 IEEE International Symposium on Inertial Sensors & Systems (INERTIAL), 2023.

RP5 - Ding Zhang, Alan Marchiori, and Joshua Stough, " Smartphone-Based Turbidity Estimation with Inherent Calibration," Proceedings of the 2022 International Conference on Computational Science and Computational Intelligence, Research Track on Signal & Image Processing, Computer Vision & Pattern Recognition (CSCI-RTPC).

RP6 - Alan Marchiori, "Labtool: A Command-Line Interface Lab Assistant and Assessment Tool," Proceedings of the 53rd ACM Technical Symposium on Computer Science Education (SIGCSE), 2022, https://doi.org/10.1145/3478431.3499285.

RP7 - Michael Santamaria and Alan Marchiori, "Demystifying LoRaWAN Security and Capacity," Proceedings of the 29th IEEE International Telecommunication Networks and Applications Conference (ITNAC), 2019, https://doi.org/10.1109/ITNAC46935.2019.9077997.

RP8 - David Gillett and Alan Marchiori, "A Low-Cost Continuous Turbidity Monitor," Sensors 2019, 19, 3039. https://doi.org/10.3390/s19143039

RP9 - Alan Marchiori, Yadong Li, Jeffrey Evans, "Design and Evaluation of IoT-Enabled Instrumentation for a Soil-Bentonite Slurry Trench Cutoff Wall," MDPI Infrastructures 2019, 4, 5. https://doi.org/10.3390/infrastructures4010005

RP10 - Malusis, M.A., Evans, J.C., Jacob, R.W., Ruffing, D., Barlow, L.C., Marchiori, A.M., "Construction and Monitoring of an Instrumented Soil-Bentonite Cutoff Wall: Field Research Case Study," Central Pennsylvania Geotechnical Conference, Hershey, PA, 2017.

RP11 - Jensen, CD, Marchiori, A, Gerstle N., "Engineering sensor networks for energy studies of the built environment" Environmental Progress and Sustainable Energy. 2017, 36(2); 539-547. DOI 10.1002/ep.12497.

RP12 - Alan Marchiori, "Maximizing Coverage in Low-Power Wide-Area IoT Networks," The First International Workshop on Mobile and Pervasive Internet of Things (PerIoT), 2017.

RP13 - Keyi Zhang and Alan Marchiori, "Crowdsourcing Low-Power Wide-Area IoT Networks," Proceedings of the 15th IEEE International Conference on Pervasive Computing and Communications (PerCom), 2017.

RP14 - Edward Prescott, Colby Rome, Colin Heinzmann, Matthew Hawkins, Alan Marchiori, Benjamin Hayes, "HydroSense: An Open Platform for Hydroclimatic Monitoring," Proceedings of the 2nd IEEE International Conference on Smart Computing (SMARTCOMP), 2016.

RP15 - Keyi Zhang and Alan Marchiori, "Natural Language Search of Sensor Data," Proceedings of the 13th IEEE Workshop on Managing Ubiquitous Communications and Services (MUCS), 2016.

RP16 - Keyi Zhang and Alan Marchiori, "Extending Semantic Sensor Networks with QueryML," in Proceedings of the Thirteenth IEEE International Conference on Pervasive Computing and Communications, Work-in-progress session (PerCom), 2015.

RP17 - Sanjay Bajekal, Nicholas Soldner, Cagatay Tokgoz, Brian Bouquillon, Mark Davis, and Alan Marchiori, "Rotor Wireless Load and Motion Monitoring Sensor Network," Presented at the Seventieth Annual American Helicopter Society Forum (AHS), 2014.

RP18 - Alan Marchiori, Qi Han, William C. Navidi, and Lieko Earle, "Building the Case For Automated Building Energy Management," in Proceedings of the Fourth ACM Workshop on Embedded Sensing Systems for Energy-Efficiency in Buildings (BuildSys), held in conjunction with ACM SenSys, 2012.

RP19 - Alan Marchiori, Douglas Hakkarinen, Qi Han, and Lieko Earle, "Circuit-Level Load Monitoring for Household Energy Management," in IEEE Pervasive Computing's special issue on smart energy systems, Jan.-Mar. 2011.

RP20 - Alan Marchiori and Qi Han, "PIM-WSN: Efficient Multicast for IPv6 Wireless Sensor Networks," in Proceedings of the Twelfth IEEE International Symposium On a World of Wireless Mobile and Multimedia Networks (WoWMoM), 2011.

RP21 - Alan Marchiori and Qi Han, "Distributed Wireless Control for Building Energy Management," in Proceedings of the Second ACM Workshop on Embedded Sensing Systems for Energy-Efficiency in Buildings (BuildSys), held in conjunction with ACM SenSys, 2010.

RP22 - Alan Marchiori, Lin Guo, Josh Thomas, and Qi Han, "Realistic Performance Analysis of WSN Protocols Through Trace Based Simulation," in Proceedings of the Seventh ACM International Symposium on Performance Evaluation of Wireless Ad hoc, Sensor, and Ubiquitous Networks (PE-WASUN), 2010.

RP23 - Alan Marchiori and Qi Han, "A Two-stage Bootloader to Support Multi-application Deployment and Switching in Wireless Sensor Networks," in Proceedings of the Seventh International Conference on Embedded and Ubiquitous Computing (EUC), 2009.

RP24 - Alan Marchiori and Qi Han, "Using Circuit-Level Power Measurements in Household Energy Management Systems," in Proceedings of the First ACM Workshop on Embedded Sensing Systems for Energy-Efficiency in Buildings (BuildSys), held in conjunction with ACM SenSys, 2009. *Best Paper Award.*

RP25 - Alan Marchiori and Qi Han, "A Foundation for Interoperable Sensor Networks with Internet Bridging," in Proceedings of the Fifth Workshop on Embedded Networked Sensors (HotEmNets), Charlottesville, Virginia, 2008.

RP26 - Alan Marchiori, Carla Brodley, Lynn Broderick, Jennifer Dy, Christina Pavlopoulou, Avi C. Kak, and Alex Aisen, "CBIR for Medical Images - An Evaluation Trial," in Proceedings of the IEEE Workshop on Content-Based Access of Image and Video databases, 2001.

Refereed Posters and Demos **(undergraduate students underlined, bold in current review period)**

PD1 - Alan Marchiori and Keyi Zhang, "PlanIt: Estimating Coverage in Low-Power Wide-Area Networks," Presented at the Smart Cities Connect Conference and Expo, 2018.

PD2 - Keyi Zhang and Alan Marchiori, "Demo Abstract: PlanIt and DQ-N for Low-Power Wide-Area Networks," Presented at the 2nd ACM/IEEE International Conference on Internet-of-Things Design and Implementation Demo Session (IoTDI), as part of CPSWeek 2017.

PD3 - Edward Prescott, Alan Marchiori, Benjamin R. Hayes, Sean P. Reese, and Zhengri Fan, "HydroSense: A low-cost, open-source, hydroclimatic monitoring system," Presented at the Third Consortium for the Advancement of Hydrologic Science (CUAHSI) Hydroinformatics Conference, 2015.

PD4 - Gilbert Kim, Alan Marchiori, B. Hayes, "Watershed Monitoring Network using Wireless Microcontrollers and Sensors Nodes Organized in a Mesh Topology," Presented at the Ninth Annual Susquehanna River Symposium, 2014.

Patents

IP1 - Devu M. Shila, Penghe Geng, Vijaya R. Lakamraju, Nicholas C. Soldner, Alan Marchiori, "Onion layer encryption scheme for secure multi-access with single card", US Patent 10127485 B2, filed June 28, 2016 and issued November 13, 2018.

IP2 - Alan M. Marchiori, Ulf J. Jonsson, Vijaya R. Lakamraju, Nicholas C. Soldner, Ritesh Khire, Joseph Zacchio, Adam Kuenzi, and Ron Chapin, "Secure electronic lock", International Patent WO 2014/153452 A1, filed March 20, 2013 and issued September 25, 2014.

IP3 - Nicholas C. Soldner, Ritesh Khire, Alan Marchiori, Vijaya R. Lakamraju, Adam Kuenzi, Wayne Larson, and Joseph Zacchio , "Electronic lock with selectable power sources", International Patent WO 2014/150649 A1, filed March 12, 2013 and issued September 25, 2014.

Theses, Students, and Projects Advised

TSP1 - Computer Science and Engineering class of 2025 academic advisor [25].

TSP2 - Computer Science and Engineering class of 2021 academic advisor [25].

TSP3 - Computer Science and Engineering class of 2017 academic advisor [27].

TSP4 - Keyi Zhang, "A Platform for Large-Scale Regional IoT Networks", Bucknell University, Department of Computer Science, Honors Thesis, 2017.

TSP5 - Yili Jiang, Xin Xu, and Ben Wells, "Campus Energy Dashboard", Bucknell University, Department of Computer Science, Senior Design Client, 2015.

TSP6 - Yushan Zhang, Chau Tieu, and Tiago Bozzetti, "An Advanced Data Store for Sensor Networks (aka Bison Sense)," Bucknell University, Department of Computer Science, Senior Design Client, 2015.

TSP7 - Geoff Barnes, Jonathan Como, and Liz Dwornik, "Participatory Sensing for Energy Efficiency", Bucknell University, Department of Computer Science, Senior Design Client, 2014.

TSP8 - Matt Argiro, Will Evans, Steve DeMelis, Jacob Reisser, Ian Abels, and Vincent Donatelli, "Room-level localizer for indoor mobile computing applications", Bucknell University, Electrical & Computer Engineering, Senior Design Client, 2014.

Service

University

Engineering/Management Representative, Committee on Planning and Budget, Fall 2021 - Spring 2024.

Member of the Socially Responsible Investing working group of the President's Sustainability Council, 2020 - 2021.

Engineering Representative, Committee on Assessment, 2019.

Member of the University Lectureship Committee, 2017-2019.

College of Engineering

Member of the Curriculum Committee, 2017-2019.

Member of the Associate Dean Search Committee, 2017-2018.

Member of the Instructional Facilities Committee, 2015-2016.

Computer Science Department

Department Chair, Summer 2022 - .

VAP Search Chair, Spring 2025.

Tenure Track Search Chair, Fall 2022, Spring 2025.

Department Review Chair (2), Fall 2023, Fall 2024.

Revised Department of Computer Science Procedures and Criteria for Faculty Evaluation (Retention, Tenure, Promotion) , Bucknell Univeristy, Fall 2023 (submitted), 2024 (approved).

Member of the DRC, 2021.

Co-author of adopted CSCI curriculum for 3 degree programs, 2021-2022.

Department Curricular Workshop, Summer 2021.

ABET Coordinator, 2018-2019.

Member of the Tenure Track Hiring Committee, 2017-2018.

Member of the Tenure Track Hiring Committee, 2015-2016.

Advisor, Bucknell Open Source Community (LAUNCH), 2014-2015.

Helped to create and implement the computer science department 203/204 placement procedure, 2014-2015.

Member of the Computer Science Department Tenure Track Hiring Committee, 2014-2015.

Participant and Session Leader, Bucknell CS Summer Research Group, 2014.

Electrical and Computer Engineering Department

Member of a DRC, 2021.

Synergistic Activities

Conference Organizing Committee Member

Work-in-Progress co-chair, IEEE International Conference on Pervasive Computing and Communication (PerCom), 2022.

Publicity Chair, IEEE International Conference on Ubiquitous Intelligence and Computing (UIC), 2018.

Publications Chair, IEEE International Conference on Pervasive Computing and Communication (PerCom), 2017-2018.

Technical Program Committee Member

International Conference on Computing, Networking and Communications (ICNC), 2023-2024

IEEE Global Communications Conference (GLOBECOM), Selected areas in Communications Internet of Things (SAC-IoT), 2018 - 2023

IEEE Pervasive Computing and Communication (PerCom), 2017 - 2023.

International Conference on Mobile Systems and Pervasive Computing (MobiSPC), 2014-2019.

IEEE Pervasive Computing and Communication (PerCom) - WIP session, 2012 - 2017.

IEEE International Conference on Smart Computing (SMARTCOMP), 2016.

International Workshop on the Impact of Human Mobility in Pervasive Systems and Applications (PerMoby), 2012 - 2016.

Journal Reviews

ACM Transactions on IoT (TIOT), 2021 - 2023.

MDPI Sensors, 2019 - 2024.

Pervasive and Mobile Computing, 2016 - 2024.

ACM Transactions on Cyber-Physical Systems (TCPS), 2017.

Community

Central Pennsylvania Rowing Association (CPRA), president, 2023 - 2024, vice-president, 2025 - .

Buffalo Valley Mountain Bike Team & Lewisburg Area Mountain Bike Team, Director, 2019-2022.

Augmented Reality Sandbox Exhibit Software and Support, Lewisburg Children's Museum, 2018-2020.

Junior and First Lego League Organizer and Coach, Lewisburg, 2016-2017.