

Julia M. Gersey

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RESEARCH INTERESTS

Sensing Networks, Embedded Systems, IoT & Mobile Computing, Applied Machine Learning.

EDUCATION

University of Michigan, Ann Arbor, MI
Ph.D. Student, Electrical & Computer Engineering
Advisor: Pei Zhang
GPA: 4.0/4.0

August 2024 - Present

Baldwin Wallace University, Berea, OH
B.Sc., Computer Science & B.Sc., Applied Mathematics
Research Advisor: Brian Krupp
GPA: 3.83/4.0, *Magna Cum Laude*

May 2024

RESEARCH GRANTS

- 2023–24 NASA Ohio Space Grant Consortium Scholarship (\$3,500)
- 2022–23 NASA Ohio Space Grant Consortium Scholarship (\$3,500)
- Women for Baldwin Wallace Giving Circle Award (\$2,000)
- ACM SenSys 2022 Travel Grant (\$1,000)
- Baldwin Wallace University URCS Travel Grant (\$500)
- The Lauria STEM Research Competition 2022 (2nd Place - \$500)

SCHOLARSHIPS & AWARDS

- University of Michigan Excellence in ECE Honor Roll 2024-2025
- Department of Energy Computational Science Graduate Fellowship (2025-2029)
- University of Michigan EECS Department Ph.D. Fellowship (Fall 2024)
- NSF Graduate Research Fellowship Program, 2024 Honorable Mention
- Charles & Elsie Little Graduate Award (\$2,000)

PUBLICATIONS

- [7] **Julia Gersey**, Jatin Aggarwal, Jiale Zhang, Jesse Codling, Pei Zhang. “Sniffing Out the City - Vehicular Multimodal Sensing for Environmental and Infrastructure Analysis”. 2025 ACM Conference on Embedded Networked Sensor Systems. (**Best Poster Award**)
- [6] Jiale Zhang, Yuyan Wu, Jesse Codling, **Julia Gersey**, Adeola Bannis, Carlos Ruiz Dominguez, Ke Sun, Pei Zhang. “On-Shelf Weight Difference Estimation Through Active Vibration Sensing”. 2025 ACM Conference on Embedded Networked Sensor Systems. (Poster)
- [5] **Julia Gersey**, Brian Krupp, Jonathon Fagert. “Pilot Study of Deploying IoT Micro Air Quality Sensors in an Urban Environment: Lessons Learned”. 2023 ACM Consortium for Computing Sciences in Colleges Midwestern Conference.
- [4] **Julia Gersey**. “MOPS Research Group Empowers Communities: Baldwin Wallace University”. ACM XRDS 30, 1 (Fall 2023), 74–75. (<https://dl.acm.org/doi/pdf/10.1145/3625396>)

- [3] Brian Krupp, **Julia Gersey**, Jonathon Fagert, Tony Mlady. “Towards Fine-Grained Air Quality Sensing in Urban Environments”. 2022 ACM Conference on Embedded Networked Sensor Systems. (Poster)
- [2] Brian Krupp, **Julia Gersey**, Franklin Lebo. “Campus Plate: Connecting Students on College Campuses to Reduce Food Waste and Food Insecurity”. 2022 International Conference on Research in Adaptive and Convergent Systems.
- [1] Brian Krupp and **Julia Gersey**. 2023. “Privacy Focused Companies, How Focused Are They?”. SIGCAS Computing Society 51, 3 (December 2022), 10. (<https://doi.org/10.1145/3585060.3585064>)

OTHER RESEARCH EXPERIENCE

Fine-Grained Air Quality Sensing with Internet-of-Things March 2022 - May 2024

Advisor: Brian Krupp, Jonathon Fagert (Baldwin Wallace University)

- Interdisciplinary NSF-funded project to investigate fine-grained Air Quality sensing in urban environments using low-power and low-cost IoT sensors while making our data publicly available.
- Coded Raspberry Pi Pico W's, Zero W's, 3B's and Arduino M4 Airlift Lite boards with Plantower PMS5003 particulate matter and SGP30 TVOC/eCO2 volatile organic compound sensors.
- Initialized development of a native iOS application for displaying our air quality data in real-time.
- Partnered with PCsForPeople to deploy our units in their Wi-Fi hotspot towers across Cleveland.

Campus Plate March 2021 - May 2024

Advisor: Brian Krupp (Baldwin Wallace University)

- Interdisciplinary project to reduce food waste, food insecurity, and student hunger via a mobile app.
- Utilized geofencing to determine if the user was within a specified range to enable reservations.
- Implemented a swipe-to-delete iOS function for users to cancel their food reservations.
- Refactored and centralized web service URL to support switching between prod/dev environment.
- Corrected user permissions (student, manager) to correctly display certain parts of the application.

EduSense: Classroom Sensing Towards Inclusive & Equitable Teaching May 2023 - Aug 2023

Advisor: Amy Ogan (Carnegie Mellon University)

- Used scikit-learn and imblearn to train models based on manually coded video data annotations and the instructor gaze and location features from the EduSense classroom sensing system.
- Applied Logistic Regression, Linear Regression, Decision Tree, and Random Forest algorithms.
- Implemented AdaBoost and SMOTE algorithms onto our imbalanced data set to improve model performance to 78.8% and 76.4% accuracy for the ‘posing questions’ and ‘answering questions’.

MENTORSHIP

- Troy Zhong (CSE Undergraduate)
- Yahya Naveed (Honors ECE, Graduated May 2025)
 - Preliminary Characterization of Bio-inspired Dog-Nose Sampler for Aerosol Detection [[arXiv](#)]
- Youssouf Sidibé (ECE, Graduated May 2025)
 - Privacy-Preserving Bathroom Monitoring for Elderly Emergencies Using PIR and LiDAR Sensors [[arXiv](#)]
- Joseph Maffetone (ECE Masters, Graduated May 2025)
 - ZV-Sim: Probabilistic Simulation Framework for Pre-emergent Novel Zoonose Tracking [[arXiv](#)]
- Kevin Yin (ECE Masters, Graduated May 2025)
 - In-field Calibration of Low-Cost Sensors through XGBoost & Aggregate Sensor Data [[arXiv](#)]

ECE 498: Mobile & Pervasive Computing & Sensing (Winter 2025, Professor: Pei Zhang)

- Kevin Yin, Joseph Maffetone, Yahya Naveed, (Julia Gersey), “Survey of Computational and Sensing Methods for Pre-emergent Zoonotic Viral Pathogen Tracking. [[researchgate](#)]

- (Julia Gersey) Rose Allegrette, Joshua Lian, Zawad Munshi, Artist Phatke. “Survey of City-Wide Homelessness Detection Through Environmental Sensing”. [arXiv]

INDUSTRY EXPERIENCE

Medical Mutual of Ohio

May 2022 - August 2022

IT Software Development Intern, Project Mentor: Kim Smith

- Tuned SQL queries for an internal admin search tool to improve efficiency when searching across two customer databases with thousands of rows and columns.
- Implemented a minimum requirement of 2 search parameters and a limited the query to fetch only the first 50 rows and set-up paging implementation which eliminated a 30-second timeout error.
- Learned SQL Server Management Studio and IBM DB2 Database integration and maintenance.

Qwickly, Inc.

January 2021 - May 2022

Application Development Intern, Project Mentors: John DiGennaro, Stephanie Gilchrist

- Completed a cross-platform mobile application using C# and Xamarin.
- Utilized Blackboard, Canvas, and D2L REST API's for an attendance-taking proof of concept to scan a generated QR code in a large lecture on a mobile device.
- Developed an internal video management system to more efficiently upload video guides to clients.
- Created a course-pinning feature to allow clients to pin their top preferences across our products.

SERVICE & MEMBERSHIPS

- IEEE Student Member April 2025 - Present
- GradSWE Social Outreach September 2024 - Present
- ACM XRDS Magazine ‘Labz’ Department Editor August 2023 - Present
- ACM SIGCAS Member March 2023 - Present
- ACM-W Student Member February 2022 - Present
- ACM Student Member January 2022 - Present
- ACM SIGCHI Member June 2023 - June 2024
- Upsilon Pi Epsilon (Computing Honor Society)
- Kappa Mu Epsilon (Mathematics Honor Society)

SELECTED PRESENTATIONS & TALKS

- [14] **Julia Gersey**, Jatin Aggarwal, Jiale Zhang, Jesse Codling, Pei Zhang. “Sniffing Out the City - Vehicular Multimodal Sensing for Environmental and Infrastructure Analysis”. ACM SenSys 2025.
- [13] **Julia Gersey**, Jatin Aggarwal, Jiale Zhang, Jesse Codling, Pei Zhang. “Sniffing Out the City - Vehicular Multimodal Sensing for Environmental and Infrastructure Analysis”. 2025 CRA-WP Poster Circle Session A.
- [12] **Julia Gersey**. “Air Quality Sensing with Internet-of-Things”. 2024 SIGCAS Works-in-Progress.
- [11] **Julia Gersey**. “Air Quality Sensing with Internet-of-Things”. 2024 NASA Ohio Space Grant Consortium Symposium.
- [10] Brian Krupp, **Julia Gersey**, Jonathon Fagert, Tony Mlady. “Towards Fine-Grained Air Quality Sensing in Urban Environments”. 2024 Choose Ohio First STEM Scholar Showcase.
- [9] **Julia Gersey**, Brian Krupp, Jonathon Fagert. “Pilot Study of Deploying IoT Micro Air Quality Sensors in an Urban Environment: Lessons Learned”. 2023 ACM Consortium for Computing Sciences in Colleges Midwestern Conference.
- [8] **Julia Gersey**, Angela Gui, Lucia Fang. “What’s happening in the classroom? Automated recognition of classroom activity for scalable multimodal learning analytics”. Carnegie Mellon University 2023 HCII REU Poster Session.
- [7] Brian Krupp, **Julia Gersey**, Jonathon Fagert, Tony Mlady. “Towards Fine-Grained Air Quality Sensing in Urban Environments”. 2023 NASA Ohio Space Grant Consortium Symposium.

- [6] **Julia Gersey**. “Using IoT to Measure Air Quality”. 2023 Cleveland Big Data Group Meet-Up.
- [5] **Julia Gersey**. “Using IoT to Measure Air Quality”. 2023 Ohio Celebration of Women in Computing (OCWiC).
- [4] Brian Krupp, **Julia Gersey**, Jonathon Fagert, Tony Mlady. “Towards Fine-Grained Air Quality Sensing in Urban Environments”. ACM SenSys 2022.
- [3] **Julia Gersey**, Audrey Kim, Vasu Ramanujam, Lisa Shen. “Congestion Control with TCP Hybla”. 2022 Carnegie Mellon University OurCS Research Conference.
- [2] **Julia Gersey**. “Fine-Grained Air Quality Sensing with IoT”. The Lauria STEM Research Competition.
- [1] Terrell McDowell, **Julia Gersey**, Leighton Medved. “Campus Plate”. 2021 Baldwin Wallace University Computing, Engineering, Mathematics & Science Showcase.

REFERENCES

Dr. Pei Zhang, Associate Professor, Electrical & Computer Engineering, University of Michigan
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Dr. Brian Krupp, Assistant Professor, Computer & Data Sciences, Case Western Reserve University
brian.krupp2@case.edu

Dr. Hae Young Noh, Associate Professor, Civil & Environmental Engineering, Stanford University
noh@stanford.edu

Dr. Rachelle Hippler, Professor, Computer Science, Baldwin Wallace University
rhippler@bw.edu