Julia M. Gersey

ECE - PhD Student
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RESEARCH INTERESTS

Sensing Networks, Embedded Systems, IoT, Mobile Computing, Human-Centered Computing.

EDUCATION

University of Michigan, Ann Arbor, MI   August 2024 - Present
Ph.D. Student, Electrical & Computer Engineering
Advisor: Pei Zhang
GPA: 4.0/4.0

Baldwin Wallace University, Berea, OH   May 2024
B.Sc., Computer Science
B.Sc., Applied Mathematics
Research Advisor: Brian Krupp
GPA: 3.83/4.0, *Magna Cum Laude*

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

- Department of Energy Computational Science Graduate Fellowship (Starting Fall 2025)
- Computing Research Association Grad Cohort for Women (CRA-WP) (2025)
- University of Michigan EECS Department Ph.D. Fellowship (Fall 2024)
- NSF Graduate Research Fellowship Program — Honorable Mention (2024)
- Charles & Elsie Little Graduate Award
- Outstanding Computer Science Senior Undergraduate Award
- Baldwin Wallace Woman of Achievement Award
- NCWIT Aspirations in Computing — Honorable Mention (2023)
- CIO Tomorrow Student Scholarship
- Upsilon Pi Epsilon (Computing Honor Society)
- Kappa Mu Epsilon (Mathematics Honor Society)
- Choose Ohio First STEM Scholarship (2020-2024)

PUBLICATIONS

[7] **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 (*In Press*). (Poster)

[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". ACM SenSys 2025 (*In Press).* (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 violate 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'.
• Tested the performance of our models with the leave one out cross validation (LOOCV) standard.

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 Mentor: 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
- ECE Graduate Student Council (Interview Weekend Team)   September 2024 - Present
- ACM XRDS Magazine Department Editor (Labz)   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

SELECTED PRESENTATIONS & TALKS
[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
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Dr. Hae Young Noh, Associate Professor, Civil & Environmental Engineering, Stanford University
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Dr. Rachelle Hippler, Professor, Computer Science, Baldwin Wallace University
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Dr. Jonathon Fagert, Assistant Professor, Engineering, Baldwin Wallace University
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Dr. Jim McCargar, Founding Dean, School of Science and Engineering, Baldwin Wallace University
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