Julia M. Gersey

ECE - PhD Student
1301 Beal Avenue
Ann Arbor, MI 48109
gersey@umich.edu | 216-312-2098 | juliagersey.com

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

Baldwin Wallace University, Berea, OH — May 2024
B.Sc., Computer Science
B.Sc., Applied Mathematics
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

- Computing Research Association 2025 Grad Cohort for Women (CRA-WP)
- University of Michigan EECS Department Ph.D. Fellowship, Fall 2024 ($41,304)
- Charles & Elsie Little Graduate Award ($2,000)
- Baldwin Wallace Outstanding Computer Science Senior Award
- NSF Graduate Research Fellowship Program Honorable Mention
- Baldwin Wallace Woman of Achievement Award
- NCWIT Aspirations in Computing Honorable Mention ($100)
- CIO Tomorrow Student Scholarship ($3,590)
- Upsilon Pi Epsilon Honor Society
- Outstanding Computing Student ($625)
- National Residence Hall Honorary
- Academic All-Ohio Athletic Conference Award
- Chi Alpha Sigma Honor Society
- Kappa Mu Epsilon Honor Society
- Anthony & Patricia Lauria Scholarship in Computer Science ($750)
- Toni & Max Dehn Scholarship for Mathematics ($250)
- The Christopher J. Sullivan and Frank & Margaret Schmidt Scholarship ($250)
- Center for Innovation & Growth Ratcliffe Student Fellow
- Choose Ohio First STEM Scholarship ($5,000 annually)

PUBLICATIONS

[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)

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

- GradSWE Social Outreach — September 2024 - Present
- ECE Graduate Student Council — September 2024 - Present
- ACM XRDS Magazine Department Editor — August 2023 - Present
- ACM SIGCHI Member — June 2023 - Present
- ACM SIGCAS Member — March 2023 - Present
- ACM-W Student Member — February 2022 - Present
- ACM Student Member — January 2022 - Present

SELECTED PRESENTATIONS & TALKS

[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
peizhang@umich.edu

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

Dr. Brian Krupp, Assistant Professor, Computer & Data Sciences, Case Western Reserve University
brian.krupp2@case.edu

Dr. Jim McCargar, Founding Dean, School of Science and Engineering, Baldwin Wallace University
jmccarga@bw.edu

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

Dr. Jonathon Fagert, Assistant Professor, Engineering, Baldwin Wallace University
jfagert@bw.edu