

Gabrielle (Elle) O'Brien

Curriculum Vitae

Compiled July 19, 2026

Contact: elleobri@umich.edu

Current position

2025-present *Director*, Michigan Institute for Data Science Graduate Certificate Program
2021-present *Research Investigator*, University of Michigan School of Information
2023-present *Lecturer IV*, University of Michigan School of Information

Previous appointments

2021-2023 *Lecturer III*, University of Michigan School of Information
2020-2021 Data scientist and developer advocate, *Iterative.ai*
2017-2019 Doctoral research assistant, *Institute for Learning and Brain Sciences, University of Washington*
2017-2019 Chief Scientist, *Botnik Studios at Amazon Alexa Accelerator*
2016-2017 Software developer, *Virginia Merrill Bloedel Hearing Research Center, University of Washington*
2016-2017 Research associate, *Department of Speech and Hearing Sciences, University of Washington*
2013-2016 Research assistant, *Department of Otolaryngology, University of Washington*
2010-2013 Research assistant, *Dynamical Neuroscience Laboratory, Georgia State University*

Education

2019 PhD in Speech and Hearing Sciences, *University of Washington*
2016 MSc in Neuroscience, *University of Washington*
2013 BA in Mathematics, *Agnes Scott College*

Select honors & awards

2024 Faculty Research Pitch Winner, *Michigan Institute for Data Science*
2024 Honored Instructor, *Michigan Housing*
2022 Provost's Teaching Innovation Prize, *University of Michigan*
2020 Young Scientist Award, *Virtual Conference on Computational Audiology*
2020 Commencement speaker, *University of Washington Department of Speech and Hearing Sciences*
2017 Top Scholar Award, *University of Washington Department of Speech and Hearing Sciences*
2016 Marie and Gordon Nobbs Award for Science Communication
2014 National Science Foundation Perfect Pitch Finalist
2013 Phi Beta Kappa
2009-2013 Wasserman Scholar, *Agnes Scott College*

Grants

2026	"When Specs Meet Science: How Researchers and RSEs Build Trustworthy Software with AI Agents", PI, \$298,417 <i>Schmidt Sciences</i>
2024	"Generative AI and the Future of Research Software", PI, \$331,595 <i>Alfred P. Sloan Foundation Digital Technologies Program</i>
2021	"Understanding barriers to machine learning for scientific discovery", PI, \$67,655 <i>Alfred P. Sloan Foundation Digital Technologies Program</i>
2021	"Statistical Literacy MOOC Specialization development grant", PI, \$25,000 <i>University of Michigan Academic Innovation Fund</i>
2021	"Michigan Safe Start Map Umbrella", co-PI, \$727,500, <i>Michigan Department of Health and Human Services</i>

Training Awards

2017	Auditory Neuroscience Training Grant (T32 Award), <i>National Institutes of Health</i>
2014-2016	Graduate Research Fellow, <i>National Science Foundation</i>

Publications

Margin codes: **P** = publication **T** = invited talk **C** = conference presentation

2025 P22	O'Brien, G. , Parker, A., Eisty, N. and Carver, J., "A survey of generative AI adoption and perceived productivity among scientists who program", <i>ArXiv</i> , in review. [doi]
2025 P21	O'Brien, G. , Weaver, A.L., Barnett, W.H., Kozhanov, D.A. and Cymbalyuk, G.S., "Cellular Mechanisms of Phase Maintenance in a Pyloric Motif of a Central Pattern Generator", <i>ArXiv</i> , in review. [doi]
2026 P20	O'Brien G.E. , Eisty N., "Scientific Software in the Age of Vibe Coding", <i>Computing in Science & Engineering</i> . [doi]
2026 P19	O'Brien, G. , Alves, A.P.S., Baltes, S., Liebel, G., Lungu, M. and Kalinowski, M., "User Misconceptions of LLM-Based Conversational Programming Assistants", <i>International Conference on Software Engineering, Journal Ahead Workshop</i> . [doi]
2026 P18	Smite, D., Wivestad, V.T., O'Brien, G. , Santos, I., Destefanis, G., Baldassarre, M.T., Lungu, M., Paja, E., de Souza Santos, R., "Beyond individual prompting efficiency: a socio-technical perspective on computational waste in AI-assisted software engineering", <i>ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM), Emerging Results track</i> , forthcoming.
2025 P17	O'Brien, G. "How Scientists Use Large Language Models to Program", <i>CHI '25: Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems</i> . [doi]
2025 P16	O'Brien, G. , "Threats to scientific software from over-reliance on AI code assistants", <i>Nature Computational Science</i> . [doi]
2024 P15	Levi S.V., Cheng H.S., O'Brien G.E. , Harel D., "A picture may be worth 1,000 words, but is it worth a letter? Examining whether the choice of label affects the perception of speech sounds", <i>Journal</i>

of Speech, Language and Hearing Research. [DOI]

- 2024
P14 **O'Brien G.**, Ganjigupta R., Dhillon P., "Wellness influencer responses to COVID-19 vaccines on social media: a longitudinal observational study". *Journal of Medical Internet Research*. [DOI]
- 2024
P13 **O'Brien G.E.**, Mick, J., "In the academy, data science is lonely: barriers to data science adoption in science research", *Harvard Data Science Review*. [DOI]
- 2024
P12 Russo et al. "Generative AI in software engineering must be human-centered: the Copenhagen manifesto", *Journal of Systems and Software*. [DOI]
- 2024
P11 Yeatman et al., "Reading instruction causes changes in category-selective visual cortex", *Brain Research Bulletin*. [DOI]
- 2022
P10 Winn M.B., **O'Brien G.E.**, "Distortion of spectral ripples through cochlear implants has major implications for interpreting performance scores", *Ear and Hearing*. [DOI]
- 2020
P9 **O'Brien G.E.**, Gijbels L., Yeatman J.D., "Context effects on phoneme categorization in children with dyslexia", *Journal of the Acoustical Society of America*. [DOI]
- 2020
P8 **O'Brien G.E.**, Yeatman J.D., "Bridging sensory and language theories of dyslexia: toward a multifactorial model", *Developmental Science*. [DOI]
- 2019
P7 **O'Brien G.E.**, McCloy D.R., Yeatman J.D., "Categorical phoneme labeling in poor readers does not depend on stimulus duration", *Journal of the Acoustical Society of America*. [DOI]
- 2019
P6 DiNino M., **O'Brien G.E.**, Bierer S.B., Jahn K., Arenberg J., "The estimated electrode-neuron interface in cochlear implant listeners is different for early-implanted children and late-implanted adults", *Journal of the Association for Research in Otolaryngology*. [DOI]
- 2018
P5 **O'Brien G.E.**, McCloy D.R., Kubota E.K., Yeatman J.D., "Reading ability and phoneme categorization", *Scientific Reports*. [DOI]
- 2018
P4 Resnick J.M., **O'Brien G.E.**, Rubinstein J.T., "Simulated spiral ganglion demyelination alters fiber sensitivity and response timing to extracellular stimulation", *Hearing Research*. [DOI]
- 2016
P3 **O'Brien G.E.** and Rubinstein J.T., "The development of biophysical models of the electrically stimulated auditory nerve: single-node and cable models", *Network: Computation in Neural Systems*. [DOI]
- 2016
P2 **O'Brien G.E.**, Imennov N.S., Rubinstein J.T., "Simulating electrical modulation detection thresholds using a biophysical model of the auditory nerve", *Journal of the Acoustical Society of America*. [DOI]
- 2013
P1 Barnett W., **O'Brien G.E.**, Cymbalyuk G.S., "Bistability of silence and seizure-like bursting", *Journal of Neuroscience Methods*. [DOI]

Invited Talks

ACADEMIC

- 2026
T27 “How programmers misunderstand the affordances of large language models”, *Copenhagen Symposium on Human-Centered AI in Software Engineering*, upcoming May 2026.
- 2026
T26 Invited lightning talk (survey findings from two studies), *Research Software Engineering in the Age of GenAI workshop*, Edinburgh — invitation-only, *Research Software Alliance & Schmidt Sciences*.
- 2026
T25 “The Future of Scientific Software in the Age of Generative AI”, *Purdue University, Seminar in Speech & Hearing and Biomedical Engineering*
- 2025
T24 “The Future of Scientific Software in the Age of Generative AI”, *University of Washington, eSciences Seminar*
- 2025
T23 “The Future of Scientific Software in the Age of Generative AI”, *Cambridge University, keynote for Schmidt Sciences Virtual Institute for Scientific Software*
- 2025
T22 “Generative AI and the future of scientific code”, *Purdue University, Seminar in Speech & Hearing and Biomedical Engineering*
- 2025
T21 “Adventures in Feature Space: Vector Similarity Measures for Machine Learning”, *University of Michigan, Electrical Engineering and Computer Science*
- 2024
T20 “How will generative AI change scientific software?”, *Purdue University, Seminars in Hearing Research*
- 2023
T19 “Barriers to Data Science Adoption in Scientific Research”, *Michigan Institute for Data Science Annual Summit*
- 2023
T18 “What Happens When Biomedical Scientists Adopt Data Science?”, *University of Texas Dallas, School of Behavior and Brain Science seminar*
- 2023
T17 “Big Hearing Science: Getting More from Data, Models and Code”, *Virtual Conference on Computational Audiology, Keynote*
- 2022
T16 “Building the Capacity for Machine Learning in Neuroscience Research”, *Purdue University, Seminars in Hearing Research*
- 2021
T15 “The Michigan Lighthouse COVID-19 Data Project”, *University of Michigan Department of Epidemiology Seminar*
- 2021
T14 “The Michigan Lighthouse COVID-19 Data Project”, *Mt. Holyoke College Math and Statistics Seminar*
- 2019
T13 “Building datasets from pop culture”, *American Statistical Association’s Symposium on Data Science and Statistics*
- 2019
T12 “Multiple deficit models of dyslexia”, *University of Washington Auditory Neuroscience Retreat*

- 2019
T₁₁ “The necessity of a multi-deficit model of dyslexia”, *Child Mind Institute*
- 2019
T₁₀ “The necessity of a multi-deficit model of dyslexia”, *University College of London Gatsby Computational Neuroscience Unit*
- 2019
T₉ “The necessity of a multi-deficit model of dyslexia”, *Katholieke Universiteit Leuven*
- 2018
T₈ “Phoneme categorization and reading ability”, *University of Washington Auditory Neuroscience Retreat*
- 2017
T₇ “Measuring change detection and certainty in the auditory system”, *Australian Hearing Hub at Macquarie University*

INDUSTRY

- 2021
T₆ “DevOps for Data Science”, *Microsoft Azure*
- 2021
T₅ “Continuous integration for machine learning”, *Vanguard Investment Management Strategies Team*
- 2021
T₄ “Automating machine learning with continuous integration”, *Reinforce Conference*
- 2019
T₃ “Generative deep learning models in practice: applications to portrait synthesis and analysis”, *Adobe Research Seattle*
- 2019
T₂ “Data science in the senses”, *Rev Data Science Leaders Summit*
- 2018
T₁ “Creative content writing with generative language models”, *Wieden+Kennedy Portland*

Conference presentations

- 2024
C₃₉ **O’Brien G.E.**, “Generative AI and the future of scientific code”, *Academic Data Science Alliance annual meeting*
- 2024
C₃₈ **O’Brien G.E.**, Mick J., “Generative AI and the future of scientific software”, *International Conference on the Science of Science and Innovation*
- 2023
C₃₇ **O’Brien, G.E.**; Mick, J. “Barriers to data science adoption for science research”, *National Science Foundation Harnessing the Data Revolution Ecosystem Meeting*
- 2021
C₃₆ **O’Brien, G.E.** “Building infrastructure for machine learning and big data in hearing science”, *Association for Research in Otolaryngology Midwinter Meeting*
- 2020
C₃₅ **O’Brien G.E.**, “DevOps for science: using continuous integration for rigorous and reproducible analysis”, *PyData Global*
- 2020
C₃₄ **O’Brien G.E.**, “Adapting continuous integration to machine learning”, *DataFest 2020*
- 2020
C₃₃ **O’Brien G.E.**, “How to make continuous integration work for machine learning”, *PyCon India*

- 2020
C32 **O'Brien G.E.**, "The technical burden of machine learning in computational audiology", *Virtual Conference on Computational Audiology*
- 2020
C31 **O'Brien G.E.**, "Adapting continuous integration and continuous delivery for ML", *MLOps Production & Engineering World*
- 2020
C30 **O'Brien G.E.**, "Packaging data and machine learning models for sharing", *SciPy 2020*
- 2020
C29 **O'Brien G.E.**, "Reimagining DevOps for ML", *DivOps 2020*
- 2019
C28 **O'Brien G.E.**, "Generative Adversarial Network Self-Portrait", *NeurIPS Workshop on Machine Learning for Creativity and Design*
- 2019
C27 **O'Brien G.E.**, Joon S.J., Yeatman J.D. "Motion sensitivity and perceptual decision making in developmental dyslexia", *Visual Sciences Society Meeting*
- 2018
C26 Botnik Studios, "You Can't Take My Door", *NeurIPS Workshop on Machine Learning for Creativity and Design*
- 2018
C25 Winn M.B. and **O'Brien G.E.**, "Time-series analysis of binaural perception and uncertainty using eye movements", *Acoustical Society of America*
- 2018
C24 **O'Brien G.E.**, McCloy D.R., Kubota E.K., Yeatman J.D. (2018), "Investigating the relationship between reading skill and categorical perception of speech", *Acoustical Society of America*
- 2017
C23 **O'Brien G.E.**, Parkinson W., Arenberg J., "Modeling current spread in a dynamically focused cochlear implant strategy", *Conference on Implantable Auditory Prosthetics*
- 2017
C22 **O'Brien G.E.** and Winn M.B., "Aliasing of spectral ripples through CI processors: a challenge to the interpretation of correlation with speech recognition scores", *Conference on Implantable Auditory Prosthetics*
- 2017
C21 **O'Brien G.E.** and Winn M.B., "Theoretical evidence for lack of correspondence between spectral ripple parameters and output of the cochlear implant processor, and an alternate explanation for the correlation with speech perception scores", *Acoustical Society of America*
- 2017
C20 **O'Brien G.E.** "The trouble with reading machines: Exploring acoustic alphabets at Haskins Laboratories post World War II.", *Acoustical Society of America*
- 2017
C19 **O'Brien G.E.** and Winn M.B., "Uncertainty in binaural hearing linked to inherent envelope fluctuations", *Association for Research in Otolaryngology Midwinter Meeting*
- 2017
C18 **O'Brien G.E.**, Parkinson W., Kreft H., Oxenham A.J., Bierer J.A., "Investigating vowel confusions in cochlear implant listeners with dynamic tripolar current focusing", *Association for Research in Otolaryngology Midwinter Meeting*
- 2016
C17 **O'Brien G.E.** and Winn M.B., "Uncertainty in binaural hearing linked to inherent envelope fluctuations", *Acoustical Society of America*
- 2016
C16 **O'Brien G.E.**, DiNino M., Biesheuvel J.D., Briare J.J., Frijns J.H., Bierer J.A., "Comparing auditory perceptual thresholds in pediatric and adult cochlear implant populations", *Acoustical Society of*

America

- 2015
C15 **O'Brien G.E.**, Imennov N.S., Rubinstein J.T., "Modeling individual differences in modulation detection", *Conference on Implantable Auditory Prosthetics*
- 2015
C14 **O'Brien G.E.**, Imennov N.S., Rubinstein J.T., "Modeling individual differences in modulation detection", *International High Performance Computing Summer School*
- 2015
C13 **O'Brien G.E.**, Imennov N.S., Rubinstein J.T., "Simulating cochlear implant modulation detection thresholds with a biophysical model of the auditory nerve", *COSYNE*
- 2015
C12 **O'Brien G.E.**, Imennov N.S., Rubinstein J.T., "Novel application of a computational model of the distributed-diameter auditory nerve population for modulation detection thresholds", *Association for Research in Otolaryngology Midwinter Meeting*
- 2014
C11 **O'Brien G.E.**, Bierer S.B., Shea-Brown E.T., Bierer J.A., "Improving a computational model of the cochlear implant", *Objective Measures Conference*
- 2013
C10 **O'Brien G.E.**, Barnett W.H., Cymbalyuk G.S., "A cellular mechanism controlling duty cycle and phase relationships in central pattern generators", *Organization for Computational Neuroscience*
- 2013
C9 **O'Brien G.E.**, Barnett W.H., Cymbalyuk G.S., "Cellular mechanisms of phase maintenance in the pyloric motif", *Southern Biomedical Engineering Conference*
- 2013
C8 Barnett W.H., **O'Brien G.E.**, Cymbalyuk G.S., "A family of mechanisms controlling bursting activity and pulse-triggered responses of a neuron model", *Southern Biomedical Engineering Conference*
- 2013
C7 **O'Brien G.E.**, Barnett W.H., Cymbalyuk G.S., "Cellular mechanisms of phase maintenance in the pyloric motif", *Spring Annual Research Conference, Agnes Scott College*
- 2013
C6 **O'Brien G.E.**, "Lines with p -adic valuation", *Spring Annual Research Conference, Agnes Scott College*
- 2012
C5 Barnett W.H., **O'Brien G.E.**, Cymbalyuk G.S., "A cellular mechanism controlling duty cycle and phase relationships in central pattern generators", *Society for Neuroscience*
- 2012
C4 Barnett W.H., **O'Brien G.E.**, Cymbalyuk G.S., "Bistability of seizure-like bursting and silence", *Organization for Computational Neuroscience*
- 2012
C3 Tobiasz H., **O'Brien G.E.**, McCartha S., "Geometry in hidden places", *Spring Annual Research Conference, Agnes Scott College*
- 2011
C2 Barnett W.H., **O'Brien G.E.**, Cymbalyuk G.S., "Bistability of silence and seizure-like bursting", *Society for Neuroscience*
- 2010
C1 **O'Brien G.E.**, Barnett W.H., Cymbalyuk G.S., "Bistability of seizure-like activity and silence in leech heart interneurons", *Center for Behavioral Neuroscience symposium*

Open source software contributions

- 2020 [Continuous Machine Learning](#). Co-creator of toolkit that adapts popular continuous integration systems to machine learning projects, including descriptive pull requests with data visualization and tables, compute resource orchestration, and data version control.
- 2020 [Data Version Control](#). Contributed to documentation and use cases. Data Version Control is a tool for extending Git version control to datasets and models.

Other publications

- 2018 “The New Age of Sound: How Leopold Stokowski and Bell Laboratories Modernized Music”, *Acoustics Today*
- 2018 “Historical Biographies in Acoustics”, *Acoustics Today*

Teaching

COURSERA COURSE DEVELOPMENT

- Spring 2025 **Data-Oriented Python Programming and Debugging**, 4-course specialization
- Spring 2024 **Statistical Literacy MOOC Specialization**, 3-course specialization

UNIVERSITY TEACHING

- Summer 2021- **SIADS 699: Capstone** University of Michigan School of Information.
- Winter 2022- **SI 699: Big Data Analytics Mastery Class** University of Michigan School of Information
- Fall 21-23 **SI 544: Introduction to Statistics** University of Michigan School of Information.
- Winter 2021 **SIADS 591: Milestone I** University of Michigan School of Information.
- Summer 2017 **SPHSC 261: The Nature of Sound**. University of Washington Department of Speech and Hearing Sciences.

SELECT WORKSHOPS

- 2025 “Open source software for scientists”, *MIDAS Data Science Summer Academy*
- 2024 “Data Science & Machine Learning Foundations”, *ICPSR-MIDAS Social Data Science Summer Academy*
- 2024 “Version Control for Applied Data Science”, *Uphill Conference*
- 2020 “How to automate machine learning with Git”, *Toronto Machine Learning Summit*
- 2020 “Computational infrastructure”, *Virtual Conference on Computational Audiology*

Service

SELECT COMMITTEE WORK

- 2026- **University of Michigan Office of the Vice President for Research**, Graduate student limited submission review committee

2021-	University of Michigan School of Information , Online programs committee
2025	University of Michigan School of Information , Strategic planning committee
2024-25	Michigan Institute for Data Science , Summer Academy curriculum committee
2023-25	Michigan Institute for Data Science , Program Committee