

*NSF Graduate Research Fellow and PhD Student developing  
generalized neural decoders for movement*

## Education

- 2019–present **University of Washington**, *Expected Graduation: June 2024*, GPA 3.82.  
PhD Student in Computer Science
- 2015–2019 **Oregon State University**, GPA 3.96, Summa Cum Laude.  
Honors Bachelor of Science in Computer Science

## Achievements and Honors

- April 2020 Received NSF GRFP award
- April 2019 Honorable Mention for NSF GRFP award
- Sept 2018 Received Grandma Honors Travel Grant to attend Brain Informatics Conference
- July 2018 Received Oregon State University Electrical Engineering and Computer Science Department scholarship to attend Grace Hopper Celebration 2018
- Jan 2018 Nominated for the Honors College's Joe Hendricks Scholarship for Academic Excellence and the Janet Richens Wiesner Scholarship for Undergraduate Women in Science
- May 2016 Received Drucilla Shepard Smith Award
- Sept 2015 Received Finley Academic Achievement Scholarship

## Research Experience

- Sept 2022 – **Research Scientist Intern**, Meta, CTRL Labs.  
present
  - Implemented generalized machine learning models to decode movement classes from EMG
  - Analyzed model performance and trends for explainability
- Sept 2019 – **Graduate Researcher**, University of Washington, Mentors: Dr. Bingni Brunton & Dr. Rajesh Rao.  
present
  - Noteworthy Article*: Generalized Neural Decoders for Transfer Learning Across Participants and Recording Modalities
  - Developed a convolutional neural network to decode neural data that generalizes to unseen patients with minimal fine-tuning
  - Our neural network performed 8% better than SOTA when generalizing to an unseen subject
- Sept 2018 – **Team Lead for Machine Learning Senior Design Project**, Oregon State University.  
June 2019
  - Adapted and fine-tuned existing text-to-speech machine learning model to detect filler words in speech within .4-.8 seconds of latency
- June 2018 – **Research Experience for Undergraduates**, University of Washington, Mentor: Dr. Andrea Stocco.  
Aug 2018
  - First Authored Article*: Refining the Common Model of Cognition Through Large Neuroscience Data
  - Discovered model of intelligent minds that best explains human brain data out of comparable models
- Sept 2016 – **Undergraduate Researcher**, Oregon State University, Mentor: Dr. Margaret Burnett.  
June 2019
  - Undergraduate Thesis*: Fixing Inclusivity Bugs: Information Processing Styles and Learning Styles
  - Investigated gender biases in user interfaces and discovered 7 best practices for unbiased interfaces

## Skills and Coursework

- Languages C/C++, Python, Javascript, Bash, MATLAB, JAVA, AWS
- Technologies Tensorflow, Pytorch, Jupyter, Git/GitHub, LaTeX
- Grad Courses Neural Engineering, Computational Biology, Data Visualization, Natural Language Processing, AI and the Brain, Machine Learning, Neural Engineering Lab, Design and Analysis of Algorithms

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## Conferences and Presentations

- April 2021 2021 CRA-WP Grad Cohort for Women Workshop, Online. Presented abstract: "Generalized Neural Decoders for Transfer Learning Across Participants and Recording Modalities"
- Oct 2020 Center for Neurotechnology Industry Symposium. Presented Abstract: "Transfer Learning for Naturalistic ECoG Data"
- Feb 2020 University of Washington Psychology Brown Bag. Invited Talk: "Gender-Inclusive Software: Finding and Fixing Inclusiveness Bugs in Software"
- Dec 2018 Brain Informatics 2018, Dec, Arlington, TX. Presented abstract: "Refining the Common Model of Cognition Through Large Neuroscience Data".
- Sept 2018 Grace Hopper Celebration 2018, Houston, TX.

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## Teaching Experience

- Sept 2020 – **Graduate Teaching Assistant**, University of Washington, Mentor: Dr. Ruth Anderson.
- Dec 2020
- Instructed and developed content for quiz sections for CSE 160, an Introduction to Python course
  - Taught students python concepts
  - Helped students debug Python code
- Sept 2016 – **Undergraduate Teaching Assistant**, Oregon State University, Mentor: Dr. Jennifer Parham-Mocello.
- June 2017
- Instructed student computer science labs
  - Compiled and evaluated student programming assignments
  - Tutored students in class topics

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## Outreach Activities

- Sep 2020 – present **Pre-Application Review Service (PARS) Mentor**, Paul G. Allen School of Computer Science and Engineering.
- Review and provide feedback on graduate school applications
  - Encourage diverse applicants to apply
  - Mentor applicants in research career paths
- June 2020 – present **Undergraduate Mentor**, University of Washington, Mentor: Bingni Brunton.
- Train undergraduate students in data analysis and research methods
  - Direct undergraduate students on research projects
  - Mentor undergraduate students in research career paths
- Sep 2020 – Sep 2022 **Seminar Co-coordinator**, Center for Neurotechnology Student Leadership Council.
- Create content for Husky Brain Bytes podcast: <https://anchor.fm/neurotec>
  - Brainstorm creative mediums for online seminars
  - Attend leadership meetings to plan Center for Neurotechnology events
- April 2016 – June 2019 **Building Homes and Hope**, Oregon State University Honors College, Mentor: Dave Kovac.
- Engage in community service activities globally
  - Traveled to Nepal in March 2018 to help build a community center in a *Dalit* community
- June 2017 – Sept 2017 **Apprenticeships in Science & Engineering Mentor**.
- Encouraged high school students to engage in college level research
  - Introduced two high school students to Human Computer Interaction research methods
  - Directed students to complete their own research projects

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## Publications

- July 2021 A. Stocco, C. Sibert, **Z. Steine-Hanson**, N. Koh, J. Laird, C. Libiere, and P. Rosenbloom, "Analysis of the Human Connectome Data Supports the Notion of A 'Common Model of Cognition' for Human and Human-Like Intelligence", *NeuroImage*, Available: <https://doi.org/10.1016/j.neuroimage.2021.118035>
- Jan 2021 S. Peterson, **Z. Steine-Hanson**, N. Davis, R. Rao, B. Brunton, "Generalized Neural Decoders for Transfer Learning Across Participants and Recording Modalities", Under Review, Available: <https://iopscience.iop.org/article/10.1088/1741-2552/abda0b>

- Jul 2020 C. Hilderbrand, C. Perdriau, L. Letaw, J. Emard, **Z. Steine-Hanson**, M. Burnett, A. Sarma, "Engineering Gender-Inclusivity into Software: Ten Teams' Tales from the Trenches", in *Proceedings of the 42nd International Conference on Software Engineering - ICSE '20.*, Available: <https://doi.org/10.1145/3377811.3380371>
- May 2019 Honors Undergraduate Thesis, *Fixing Inclusivity Bugs: Information Processing Styles and Learning Styles*, Available: [https://ir.library.oregonstate.edu/concern/honors\\_college\\_theses/1n79h977c](https://ir.library.oregonstate.edu/concern/honors_college_theses/1n79h977c)
- May 2019 M. Burnett, A. Oleson, **Z. Steine-Hanson**, "The GenderMag-Teach Project" , CHI'19 Extended Abstracts, May 4-9, 2019, Glasgow, Scotland, UK.
- May 2019 M. Vorvoreanu, L. Zhang, Y-H. Huang, C.Hilderbrand **Z. Steine-Hanson**, and M. Burnett, "From Gender Biases to Gender-Inclusive Design: An Empirical Investigation" In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19). ACM, New York, NY, USA, Paper 53, 14 pages. 2019. Available: <https://doi.org/10.1145/3290605.3300283>
- Dec 2018 **Z. Steine-Hanson**, N. Koh, and A. Stocco, "Refining the Common Model of Cognition Through Large Neuroscience Data," *Procedia Computer Science*, 2018, p. 813 - 820. Available: <https://doi.org/10.1016/j.procs.2018.11.026>
- Oct 2018 C. Mendez, **Z. Steine-Hanson**, A. Oleson, A. Horvath, C. Hill, C. Hilderbrand, A. Sarma, and M. Burnett, "Semi-Automating (or not) a Socio-Technical Method for Socio-Technical Systems," *2018 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*. Lisbon, Portugal: IEEE Press, 2018, p. 23-32. Available: [https://www.researchgate.net/publication/328520368\\_Semi-Automating\\_or\\_not\\_a\\_Socio-Technical\\_Method\\_for\\_Socio-Technical\\_Systems](https://www.researchgate.net/publication/328520368_Semi-Automating_or_not_a_Socio-Technical_Method_for_Socio-Technical_Systems)
- Aug 2018 A. Oleson, C. Mendez, **Z. Steine-Hanson**, C. Hilderbrand, C. Perdriau, M. Burnett, and A. J. Ko, "Pedagogical Content Knowledge for Teaching Inclusive Design," in *Proceedings of the 2018 ACM Conference on International Computing Education Research - ICER '18*. Espoo, Finland: ACM Press, 2018, pp. 69-77. Available: <http://dl.acm.org/citation.cfm?doid=3230977.3230998>
- June 2018 C. Mendez, H.S. Padala, **Z. Steine-Hanson**, C. Hilderbrand, A. Horvath, C. Hill, L. Simpson, N. Patil, A. Sarma, and M. Burnett, "Open Source Barriers to Entry, Revisited: A Sociotechnical Perspective," in *Proceedings of the 40th International Conference on Software Engineering - ICSE '18*. Gothenburg, Sweden: ACM Press, 2018, pp. 1004-1015. Available: <http://dl.acm.org/citation.cfm?doid=3180155.3180241>