Zöe Steine-Hanson

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

Education

2019–present **University of Washington**, *Expected Graduation: June 2024*, GPA 3.78.
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 2019 – present **Graduate Researcher**, University of Washington, Mentors: Dr. Bingni Brunton & Dr. Rajesh Rao.
- *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 – June 2019 **Team Lead for Machine Learning Senior Design Project**, Oregon State University.
- 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 – Aug 2018 **Research Experience for Undergraduates**, University of Washington, Mentor: Dr. Andrea Stocco.
- *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 – June 2019 **Undergraduate Researcher**, Oregon State University, Mentor: Dr. Margaret Burnett.
- *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, HTML, CSS, Javascript, Bash, Matlab, java

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

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.

Teaching Experience

Sept 2020 – Dec 2020

Graduate Teaching Assistant, University of Washington, Mentor: Dr. Ruth Anderson.
- 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 – June 2017

Undergraduate Teaching Assistant, Oregon State University, Mentor: Dr. Jennifer Parham-Mocello.
- Instructed student computer science labs
- Compiled and evaluated student programming assignments
- Tutored students in class topics

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

Sep 2020 - present

Seminar Co-coordinator, Center for Neurotechnology Student Leadership Council.
- Create content for new Husky Brain Bytes podcast: https://anchor.fm/neurotec
- Brainstorm creative mediums for online seminars
- Attend leadership meetings to plan Center for Neurotechnology events

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

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

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

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)*. Libson, 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`

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, Findland: 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`