

Zöe Steine-Hanson

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NSF Graduate Research Fellow and PhD Student interested in the intersection of Machine Learning and Neuroscience.

Education

- 2019–present **University of Washington**, GPA 3.73.
PhD Student in Computer Science
- 2015–2019 **Oregon State University**, GPA 3.96, Summa Cum Laude.
Honors Bachelor of Science in Computer Science

Experience

- Sept 2019–present **Grad Research Assistant**, University of Washington, Mentors: Dr. Bingni Brunton & Dr. Rajesh Rao.
- Research Area: Neural Engineering
 - Developed a machine learning algorithm to decode neural data that generalizes to unseen patients with minimal fine-tuning
 - Our machine learning algorithm performed 8% better than SOTA when generalizing to an unseen subject
 - Execute signal processing techniques on time-series data
 - Python/Tensorflow
- Sept 2016–June 2019 **Undergraduate Researcher**, Oregon State University, Mentor: Dr. Margaret Burnett.
- Research Area: Human Computer Interaction
 - Investigated gender biases in user interfaces and discovered 7 best practices for unbiased interfaces
 - Collaborated with companies and more than 10 universities to teach about gender biases in software
 - Conducted and analyzed qualitative data from user studies
- Sept 2018–June 2019 **Team Lead for Machine Learning Senior Design Project**, Oregon State University.
- Developed a speech recognition machine learning application that could detect filler words in speech within .4-.8 seconds of latency
 - Fine-tuned existing text-to-speech model to recognize filler words
 - Developed personalized data set containing filler words
 - Designed user interfaces
 - Python/Pytorch
- June 2018–Aug 2018 **Research Experience for Undergraduates**, University of Washington, Mentor: Dr. Andrea Stocco.
- Research Area: Neural Engineering and Cognitive Science
 - Discovered model of intelligent minds that best explains human brain data out of comparable models
 - Analyzed and interpreted data from 172 fMRI participants
 - Published first-author peer-reviewed article
 - Bash/Python/Matlab
- 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
 - Python/C++/C

Publications

- Under Review 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://www.biorxiv.org/content/10.1101/2020.10.30.362558v1?rss=1>

- Under Review 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", Under Review, Available: <https://doi.org/10.1101/703777>
- 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)*. 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
- 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>

Conferences

- Canceled 2020 CRA-WP Grad Cohort for Women Workshop
- Sept 2018 Grace Hopper Celebration 2018, Houston, TX.
- Dec 2018 Brain Informatics 2018, Dec, Arlington, TX. Presented abstract: "Refining the Common Model of Cognition Through Large Neuroscience Data".

Skills and Coursework

- Languages C/C++, Python, HTML, CSS, Javascript, Bash, MATLAB, JAVA
- Technologies Tensorflow, Pytorch, Jupyter, Git/GitHub, LaTeX, UNIX
- Courses AI and the Brain, Machine Learning, Neural Engineering Lab, Design and Analysis of Algorithms, Brain and Behavior, Introduction to Usability Engineering, Research Methods in Psychology

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 - **Seminar Co-coordinator**, Center for Neurotechnology Student Leadership Council.
 present
 - Organize upcoming Center for Neurotechnology grad student podcast
 - Brainstorm creative mediums for online seminars
 - Collaborate across neural engineering and computational neuroscience centers at UW to organize events
- June 2020 - **Undergraduate Mentor**, University of Washington, Mentor: Bingni Brunton.
 present
 - Train undergraduate students in data analysis and research methods
 - Direct undergraduate students on research projects
 - Mentor undergraduate students in research career paths
- April 2016 - **Building Homes and Hope**, Oregon State University Honors College, Mentor: Dave Kovac.
 June 2019
 - Engage in community service activities globally
 - Traveled to Nepal in March 2018 to help build a community center in a *Dalit* community
- June 2017 - **Apprenticeships in Science & Engineering Mentor**.
 Sept 2017
 - 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

Achievements and Honors

- April 2020 NSF GRFP Awardee
- 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
- June 2018 Research Experience for Undergraduates at the Center for Neurotechnology
- 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
- June 2017 Mentor for Apprenticeships in Science & Engineering program
- May 2016 Received Drucilla Shepard Smith Award
- Sept 2015 Received Finley Academic Achievement Scholarship