Chase King

CONTACT INFORMATION

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EDUCATION

University of Washington, Seattle, Washington 2018 - 2022
B.S. with Honors in Computer Science (co-advised by Saskia de Vries and Adrienne Fairhall)
B.S. in Applied and Computational Mathematical Sciences (Data Sciences & Statistics)
Minor in Neural Computation and Engineering
GPA: 3.94 / 4.0

RESEARCH AND INDUSTRY EXPERIENCE

Allen Institute, MindScope Program 2021 - Present
Research Intern, with Saskia de Vries and Alan Degenhart *(now at Starfish Neuroscience)*
Using the Allen Brain Observatory Datasets to investigate neural activity during saccadic eye movements, in an effort to gain a better understanding of the roles these eye movements play in visual processing, and how the brain uses visual information to create perceptions and guide behavior.

Beewriter 2020
Full Stack Engineer, Web and Backend Development, Winter & Spring 2020
Research Intern, Natural Language Processing (NLP), Summer & Fall 2020
Developing NLP models to provide grammatical feedback and sentence-level suggestions to improve the readability and clarity of written work in a variety of languages. Platform used by thousands of people speaking dozens of languages across the globe. (Link)

University of Washington, Independent Projects
Mathematical Modeling of Visual Cortex Orientation Columns Spring 2021
Applies complex analysis modeling techniques to experimental neuroscience data to elucidate an odd finding, namely that the density of "pinwheels" roughly equals the constant π. (Paper written for MATH 336 Honors Accelerated Advanced Calculus/Analysis; advised by Dr. Dami Lee.) (Link)

Biologically-inspired sequence learning models Fall 2020
Discusses the mathematical theory of sparse binary representations and how they can be used to design biologically-inspired sequence learning models that are robust to noise. (Paper written for CSE 599B, Graduate AI and the Brain; advised by Professor Rajesh Rao.) (Link)

A spectral-based clustering algorithm for directed graphs Fall 2020
The theory behind a clustering method for directed graphs utilizing the bottom eigenvector of the Hermitian normalized Laplacian matrix. (Paper written for CSE 521, Graduate Algorithms; advised by Professor Shayan Oveis Gharan). (Link)

Computational complexity and biophysical realism tradeoff in single-neuron models Spring 2020
Discusses several computational/mathematical models for simulating the spiking dynamics of neurons with varying degrees of computational complexity and biophysical realism, and how to choose the optimal model given different problem circumstances. (Paper written for CSE 528, Graduate Computational Neuroscience; advised by Professors Rajesh Rao and Adrienne Fairhall.) (Link)

FELLOWSHIPS, AWARDS & HONORS

Magna Cum Laude, University of Washington
Phi Beta Kappa

Husky 100, 2022
One of 100 University of Washington undergraduate and graduate students across all areas of study recognized as making the most of their time at the UW.

Levinson Emerging Scholars Award, 2021
Research grant awarded to talented and highly motivated University of Washington undergraduates to pursue creative and advanced bioscience and related research. ($6750 award)

Best Neurotechnology Project Award, University of Washington Center for Neurotechnology, 2021
Worked for 3 months three graduate students to develop a wearable device aiding in navigation for visually impaired persons. Project chosen as the best overall and most commercially viable among 8 groups by a team of independent judges.

Purple & Gold Scholarship, University of Washington
Dean's List, All Quarters, University of Washington

Unpublished Manuscripts

[1] *How eye movements influence visual brain activity: A large-scale analysis of saccadic eye movements and their induced visual cortical neural activity in head-fixed mice.*
Chase King, Alan Degenhart, and Saskia de Vries.
(Currently preparing for publication.)

Teaching Assistantships

CSE 446: Machine Learning, University of Washington Winter 2022
Lead two weekly discussion sections, assisted with course planning, wrote and graded homework problems, and helped students on discussion board. Guest-taught a lecture on ethics and societal impact of machine learning.
- Instructor: Professor Sewoong Oh

CSE 446/546: Machine Learning, University of Washington Fall 2021
Jointly-offered undergraduate- and graduate-level course. Assisted with course planning, wrote and graded homework problems, held weekly office hours. Developed new homework problems encouraging students to think about societal impacts of machine learning model deployment.
- Instructors: Professor Jamie Morgenstern and Professor Simon S. Du

Presentations and Talks

- March 2022. *The Ethics and Societal Impact of Machine Learning.* University of Washington, Guest Lecture in CSE 446: Machine Learning (Winter 2022).
- December 2021. *The many factors influencing mouse eye movements: how do transgenic cre lines and running speed affect saccades?* Allen Institute Showcase Symposium.
- August 2021. *Saccadic eye movements in head-fixed mice, and the underlying changes in visual cortical activity.* Allen Institute Summer Intern Showcase. (Link)
- June 2021. *ReView: An assistive navigation device for visually-impaired persons.* University of Washington Center for Neurotechnology.

Technical Skills

Python (PyTorch, NumPy, Matplotlib, AllenSDK), Java, LaTeX, SQL, JavaScript, React, HTML/CSS, MongoDB, Redis, Bash.

Leadership

University of Washington Husky Cycling Club
Administrator 2019 - 2021
Officer 2018 - 2019
Organizing and leading a cycling club at the University of Washington. We host weekend group rides in addition to organizing a spring race weekend in Seattle as part of a conference of Pacific Northwest colleges and universities.

Volunteer / Extracurricular Experience

University of Washington Husky Cycling Club, Club Leader and Officer	2018 - 2021
Audi Cycling Team / Kryki Sports, Regional road cycling racing	2018 - 2021
University of Washington Farm & Center for Urban Horticulture, Volunteer	2021
University of Washington CSE Big/Little Undergrad Mentor	2021
Grey Matters Undergraduate Journal Club	2021
Machines Who Learn Journal Club	2019

Other Interests

Indoor living wall design & consultation, tropical plant cultivation & propagation, road cycling, long-distance trail running, acoustic guitar, camping, reading, Thai cooking.

Date Compiled

May 11, 2022