

ELIZABETH HALL

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Cognitive Science PhD designing machine learning systems for large-scale human behavioral data.

WORK EXPERIENCE

Integrated Attention Lab, Center for Mind & Brain (PI: Joy Geng) **Davis, CA**
National Defense Science and Engineering Fellow Aug. 2020 – Aug. 2024

- developed experimental paradigm to measure shifts in remembered object location across a 3D space using machine learning and computer vision [\[paper\]](#) [\[code\]](#)
- developed classifier that can predict whether a viewer is seeing a route in a correct or scrambled order based on their eye movements [\[paper\]](#)
- built LLM based on labels of 200k objects in 20k images; correlations of vectors matrices show that image network better explains verbal scene descriptions than similarly sized text-based network [\[poster\]](#)

Amazon Alexa Measurements and Engagement (PI: Xin Tang) **Seattle, WA**
Data Science Intern June 2023 – Sept. 2023

- worked with customer segmentations and casual inference model to predict customers' Alexa activity over one week; adapted LSTM model to predict activity with 93% accuracy [\[DeepAR+ paper\]](#)
- developed feature engineering / feature weighting pipeline to process 10m customers' data through Amazon data-storage system (AWS, S3, ETL, Redshift)

Visual Cognition Lab, Center for Mind and Brain (PI: John Henderson) **Davis, CA**
Graduate Student Researcher Sept. 2018 – Aug. 2020

- developed stimuli set of 200 fully annotated real-world scenes; developed sorting algorithm for occluded objects; created image maps of the distribution of conceptual information from similarity matrices of semantic network vectors [\[paper\]](#)
- fit individual ex-gaussian distributions to fixation durations and used Bayesian linear mixed effects models to show that people with worse working memory ability have longer fixation durations [\[paper\]](#)
- developed processing pipeline to automate measures of object-attention; used shift and generalized linear models to quantify how task impacts attention in 10k trials of eye-tracking data [\[paper\]](#)

National Institute of Mental Health (PIs: Chris Baker, Leslie Ungerleider) **Bethesda, MD**
Intramural Research Fellow Aug. 2016 – Sept. 2018

- collected ratings from 2k participants in online experiments to characterize errors in 200 sketches; used general linear models and computer models to quantify distortions over time [\[paper\]](#)
- used representational matrices and multivariate pattern analysis to decode what images participants were remembering from during fMRI brain scans [\[paper\]](#) [\[press\]](#)
- collected ratings from 8.5k participants in online experiments to code memory errors in 2.6k drawings; used linear models and computer vision to decode what features predict recall memory [\[paper\]](#) [\[press\]](#)

EDUCATION & HONORS

PhD Vision & Cognitive Science, University of California, Davis (4.0 GPA) June 2024

MSc Language Neuroscience, University of the Basque Country June 2016

BA Biology, Bennington College June 2015

Funding: University of California President's Fellow (*\$53k for dissertation research, top graduate fellowship in UC system*), National Defense Science & Engineering Fellow (*<1% acceptance, \$180k for 3-yrs*), NIH Research Fellow (*\$80k for 2-yrs*)

Awards: National Eye Institute Early Career Scientist Grant (2023), UC Davis Outstanding Mentor Award (2023), UC Davis Diverse Mentoring Award (2021)

Professional Memberships: Women in Data Science, Vision Science Society, Females of Vision et al (FoVea)

SKILLS

Programming: Python, SQL, R, MATLAB, Javascript, bash, CSS, HTML, learning C++

Tools: Tensorflow, Keras, pytorch, TensorRT, PySpark, OpenCV, sklearn, scipy, numpy, pandas, Unity, git