# ELIZABETH HALL

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**Cognitive Science PhD** I have 8+ years of experience working with machine learning models, with 10 peer-reviewed papers and 16 conference submissions using ML to model large-scale data of human behavior.

## WORK EXPERIENCE

**Integrated Attention Lab, Center for Mind & Brain** **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 ***logistic regression classifier*** to predict if someone is lost while navigating based on their eye movements [paper]
- built LLM based on labels of objects in 20k images (Image2Vec); compared performance to similarly sized ***Word2Vec*** network using representational similarity analyses [poster]

**Amazon Alexa Measurements and Engagement** **Seattle, WA**
Data Science Intern June 2023 – Sept. 2023

- worked with ***gradient boosting tree model*** to predict customers' engagement and ***shopping activity*** over one week; developed alternative ***deep neural network*** LSTM model with 93% accuracy
- created ***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** **Davis, CA**
Graduate Student Researcher Sept. 2018 – Aug. 2020

- developed stimuli set of fully annotated real-world scenes; developed sorting algorithm for occluded objects; created image maps of the distribution object representations [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** **Bethesda, MD**
Intramural Research Fellow Aug. 2016 – Sept. 2018

- collected ratings from 2k participants in online experiments to characterize errors in sketches; used general linear models and computer models to quantify distortions over time [paper]
- used representational matrices and multivariate pattern analysis to decode stimulus identity while participants recalled studied images 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 Cognitive Science,** University of California, Davis (4.0 GPA) June 2024
**BA Biology & Psychology,** 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)
**Statistical Consultant:** University of Melbourne Collaborative Assessment for Trustworthy Science
**Professional Memberships:** Women in Data Science, Vision Science Society, Society for Neuroscience

## SKILLS

**Programming:** Python, SQL, R, MATLAB, Javascript, bash, CSS, HTML
**Tools:** Tensorflow, Keras, pytorch, OpenCV, sklearn, MXNet, scipy, numpy, pandas, Unity, git