

Maedbh King

· PH.D. CANDIDATE · UC BERKELEY ·

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Summary

Cognitive and computational neuroscientist with leadership experience in academia and non-profit work. 6+ years experience conducting hypothesis- and data-driven research, and using machine learning and statistics to build models of brain function. Strong record of publishing in scientific journals (>10 articles, >400 citations), presenting at research conferences (>10 proceedings), and making science accessible (2 open-source datasets and 1 Python module). Passionate about using my experience as an educator and academic mentor to communicate complex ideas to non-expert audiences.

Education

2017-2022 **University of California, Berkeley**, Ph.D. in Cognitive Neuroscience (GPA: 3.96/4.00)

2017-2022 **University of California, Berkeley**, Graduate Certificate in Applied Data Science (GPA: 3.98/4.00)

2015-2017 **Western University**, M.Sc. in Neuroscience (GPA: 4.0/4.0)

Research Experience

Ph.D. Graduate Researcher (2017-2022)

[Github \[link\]](#)

MAPPING NETWORKS OF THE HUMAN BRAIN DURING LEARNING, PUBLICATIONS IN *Brain*, *Neuron*, *Nature Neuroscience*

University of California, Berkeley

- Developed machine learning pipelines to predict cognitive function in the human cerebellum during learning, tested patients with spinocerebellar ataxia on a series of cognitive tasks to assess impairments, analyzed post-mortem brains to create a transcriptomic map of the human cerebellum.
- Designed a longitudinal study to model human learning. Led and managed a team of 5 to collect 300 experimental hours of biological data including functional magnetic resonance imaging (fMRI), eye-tracking, and physiological data (during COVID-19 pandemic).
- Co-wrote an R35 grant that received 5-year funding from the NIH. Managed an institutional review board (IRB) protocol for fMRI experiments.
- Created a widely adopted mentorship agreement for research assistants to ensure transparency and accountability in mentoring practices. Co-led a journal club for undergraduate research assistants, instructing them on the scientific method, data analysis, and statistics.

M.Sc. Graduate Researcher (2015-2017)

[Paper \[link\]](#)

DEVELOPING NOVEL BRAIN MAPS OF THE HUMAN CEREBELLUM, PUBLICATIONS IN *Brain*, *NeuroImage*, *Frontiers*

Western University

- Created a novel map of the human cerebellum by applying matrix factorization to high-dimensional neural data [\[link\]](#).
- Initiated a collaboration with scientists from Stanford University to use natural language processing and regularized regression to assign cognitive labels [\[link\]](#) to the human cerebellum. Invested in open-source science, the data are publicly available and have been downloaded >200 times [\[link\]](#).

RESEARCH IMPACT

2020 **The mysterious, multifaceted cerebellum**, Knowable Magazine

[link](#)

2019 **Scientists map our underappreciated "little brain"**, University of California, Berkeley

[link](#)

2019 **New maps of the cerebellum show how our "little brain" works**, Psychology Today

[link](#)

Selected Projects

SUITPy: Open-source package for the visualization of cerebellum imaging data

[Library \[link\]](#)

WESTERN UNIVERSITY; UNIVERSITY OF CALIFORNIA, BERKELEY

2021

- Core developer of *SUITPy*, an open-source Python toolbox to visualize cerebellum data. Identified best programming practices for improving core functionality, resulting in novel implementation of 2D surface mapping and incorporation of brain atlases from open-source repositories.

Predicting human performance using computer vision models

[Github \[link\]](#)

DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF CALIFORNIA, BERKELEY

2020

- Recorded >15 hours of varsity athletes taking penalties, and implemented markerless labeling of videos to understand human performance in predicting action.

Cross-Functional and Cross-Disciplinary Research Collaboration

[Team Leader](#)

UNIVERSITY OF CALIFORNIA, BERKELEY; PRINCETON UNIVERSITY; YALE UNIVERSITY

2020

- Implemented and maintained data warehousing for clinical research projects, established norms and guidelines for cross-functional collaboration.

Prison University Project

[Lecturer \[link\]](#)

SAN QUENTIN STATE PRISON

Jan. - May 2019

- Designed and lectured a new curriculum in General Psychology for incarcerated students. I brought human brains into the classroom to teach neuroanatomy, mirroring the UC Berkeley student experience. Provided executive board with formal analysis of organizational operations.

Skills & Interests

Programming Languages

Python, SQL, R, MATLAB, HTML, Bash

Frameworks and Tools

Keras, OpenCV, Numpy, Scikit-learn, Scipy, Pandas, NumPy, Git, Vim, Blender, Deeplabcut

Conceptual

High performance computing (Savio), Grant Writing and IRB Ethics Protocols, MRI technician certificate