CHRISTINA MAHER

1 Gustave L. Levy PI, New York, NY 10029 | +1 (917) 628-9010 | christina.maher@icahn.mssm.edu Personal Website | Google Scholar | GitHub | Portfolio

Computational cognitive neuroscientist with expertise in signal processing, time-series ML for neurophysiological data, open source Python-based software development. I collect high precision neuronal/behavioral data in neurosurgical patients and design computational and statistical methods to study how humans simplify complex information.

EDUCATION

Icahn School of Medicine at Mount Sinai | PhD | Neuroscience - GPA: 4.0/4.0

Supervisor(s): Angela Radulescu, PhD; Ignacio Saez, PhD Expected May 2026 Thesis Project: "Investigating the neurocognitive mechanisms underlying multi-attribute reinforcement learning." Relevant Coursework: Machine Learning for Biomedical Science, Fundamentals of Computational Psychiatry

University College London | MSc | Cognitive Neuroscience - GPA: Distinction (4.0/4.0) London, UK Supervisor: Professor Tali Sharot, PhD September 2020 – September 2021 Thesis Project: "Anticipating information's impact on internal states and external reality."

Fairfield University | BS | Behavioral Neuroscience - Major GPA: 3.90/4.0 Magna Cum Laude Fairfield, CT Supervisor: Dr. Margaret McClure, PhD September 2016 – May 2020 Thesis Project: "Cognitive mechanisms of risk and resilience following stress exposure."

RESEARCH EXPERIENCE

Human Neurophysiology Lab, ISMMS

PhD Candidate, Principal Investigator: Dr. Ignacio Saez, PhD

- Developing machine learning models to analyze high-density neurophysiological time-series data. •
- Engineering open-source Python package (NeuroCluster) for signal processing and time-series analyses. •
- Contributed to developing Python-based signal processing pipeline. •
- Collecting high-throughput human intracranial neurophysiological data in neurosurgical setting (N=22 patients). •
- Led industry collaboration with NeuroPace to advance neurotechnology applications. ٠
- Initiated lab's gamification efforts for experimental paradigms increasing participant retention from 50% to 98%. •

Dynamics of Cognition and Affect Lab, ISMMS

PhD Candidate, Principal Investigator. Dr. Angela Radulescu, PhD

- Training neural models (PyTorch) to advance cognitive model discovery and improve their predictive accuracy.
- Designing, evaluating, and optimizing computational cognitive models to explain complex human behavior. •
- Designed web-based behavioral task (JavaScript) to study naturalistic reinforcement learning behavior. •

Affective Brain Lab, UCL & MIT

MSc Research Assistant, Principal Investigator. Dr. Tali Sharot, PhD

- Designed, implemented, and evaluated computational models of participants' information-seeking behavior. •
- Developed experimental paradigm and led data collection (N=600 online participants). •

McClure Clinical Psychology Lab, ISMMS & Fairfield University

Undergraduate Research Assistant, Principal Investigator: Dr. Margaret McClure, PhD

- Led data collection, data preprocessing, and statistical analyses
- Conducted neuropsychology interviews administered behavioral paradigms with patients •

SELECTED PEER-REVIEWED JOURNAL AND CONFERENCE PAPERS

Maher, C., Qasim, S., Martinez, L., Saez, I., Radulescu, A. Decoding Latent Human Attention Across Cognitive Models. (2024). Under review Proceedings of Conference on Computational Cognitive Neuroscience (CCN).

- Maher, C., Qasim, S., Nunez, L., Saez, I., Radulescu, A. Linking Neural Representations to Adaptive Behavior with Cognitive Modeling. Accepted at ICLR Representational Alignment Workshop (Singapore, MY April 2025).
- Maher, C.*, Fink, A.*, Qasim, S., Saez, I. (2024). Python pipeline for non-parametric cluster-based permutation testing for electrophysiological signals related to computational cognitive model variables. Under review Journal of Open Source Software. *co-first authorship
- Maher, C., Tortolero, L., Jun, S., Cummins, D. D., Saad, A., Young, J., Nunez Martinez, L., Schulman, Z., Marcuse, L., Waters, A., Mayberg, H. S., Davidson, R. J., Panov, F., & Saez, I. (2025). Intracranial substrates of meditation-

New York City, NY

New York City, NY

January 2022-present

January 2022-present

New York, NY

London, UK

July 2020-September 2021

New York City, NY September 2018-May 2020

induced neuromodulation in the amygdala and hippocampus. *Proceedings of the National Academy of Sciences of the United States of America*, 122(6), e2409423122. doi.org/10.1073/pnas.249423122

- Maher, C., Gyles, T., Nestler, E. J., & Schiller, D. (2024). A guide to science communication training for doctoral students. *Nature neuroscience*, doi.org/10.1038/s41593-024-01646-y
- Cogliati Dezza, I., **Maher, C.,** & Sharot, T. (2022). People adaptively use information to improve their internal states and external outcomes. Cognition, 228, 105224. doi.org/10.1016/j.cognition.2022.10522

SELECTED CONFERENCE PRESENTATIONS

- Maher, C., Qasim, S., Nunez, L., Saez, I., Radulescu, A. Decoding Latent Attention Across Cognitive Models. Abstract accepted for presentation at the Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM) (Dublin, Ire June 2025). *Invited talk.
- Maher, C., Qasim, S., Nunez, L., Saez, I., Radulescu, A. Intracranial recordings uncover neuronal dynamics of multidimensional reinforcement learning. Abstract accepted for presentation at Cognitive and Systems Neuroscience (COSYNE) (Montreal, CA March 2025).
- Maher, C., Qasim, S., Nunez, L., Saez, I., Radulescu, A. Intracranial recordings reveal neural encoding of attentionmodulated reinforcement learning in humans. Poster presented at the Cognitive Computational Neuroscience Conference (Boston, MA August 2024). **Invited talk*
- Maher, C., Qasim, S., Nunez, L., Radulescu, A., Saez, I. Neuronal encoding of attention-modulated reinforcement learning. Poster presented at the Gordon Research Seminar: Neurobiology of Cognition (Waterville Valley, NH July 2024). *Invited talk
- Maher, C., Qasim, S., Nunez, L., Saez, I., Radulescu, A. Investigating the neural basis of human representation learning with intracranial EEG. Poster presented at the Convention on the Mathematics of Neuroscience and AI (Rome, IT May 2024).

APPLIED RESEARCH, NGO, & OUTREACH EXPERIENCE

Solace Women's Aid

Counselling Service Coordination Assistant

• Managed rape crisis helpline/counselling services and led partnerships with community stakeholders.

UCL Behavioral Insights Team

Project Leader

• Led interdisciplinary team in design, implementation, and analysis of field project to improve student wellbeing.

Mount Sinai Mentoring in Neuroscience Discovery (MINDS)

Co-President | August 2023-September 2024

• Lead a graduate student organization delivering neuroscience education to 100s of NYC students.

Mount Sinai Center for Excellence in Youth Education

Teaching Fellow

• Taught over 100 hours of neuroscience to 100+ middle and high school students.

HONORS AND AWARDS

Teaching Excellence Award (ISMMS)2023Icahn School of Medicine Doctoral Fellowship (ISMMS)2021Behavioral Insights Team – Changemakers Project Grant (University College London)2021Academic Honors and Societies: Dean's List, Sigma Xi, Psi Chi, Alpha Epsilon Delta (Fairfield University)2016-2020Magis Scholarship – highest undergraduate merit scholarship (Fairfield University)2016-2020

SKILLS

Data Analysis/Programming: Python (scientific computing – numpy, Pandas; statistics/machine learning - scikitlearn, PyTorch; data visualization – seaborn, matplotlib, web development - PsychoPy), Software Management (GitHub), R, MATLAB, JavaScript (web development – jsPsych).

Online Study Software: Qualtrics, Gorilla, Pavlovia, Prolific

Clinical Research Certifications: NHS Good Clinical Practice

Teaching: Neural Data Science and Statistics, Effective Science Communication, Computational Neuroscience Additional Education: Queen Mary University London (January-June 2019); Barcelona Summer School for Advanced Modeling of Behavior (July 2023); University of Washington Neurohackacademy (Aug 2023). Peer Review: Journal of Open-Source Software, Nature Scientific Reports, Nature Human Behavior Languages: English, Italian

London, UK January 2021-August 2021

London, UK

New York, NY

September 2023 – September 2024 o 100s of NYC students.

New York, NY

November 2022 - August 2023

June 2020 – September 2021