CHRISTINA MAHER

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Personal Website | Google Scholar | GitHub | Portfolio

Computational cognitive neuroscientist with expertise in experimental design, signal processing, time-series machine/deep learning for neurophysiological data, and Python-based software development. I collect high precision neural/behavioral data from neurosurgical patients and design computational and statistical methods to study human decision-making. Skilled in developing interpretable models to generate actionable insights.

RESEARCH EXPERIENCE

Human Neurophysiology Lab, ISMMS — **New York City, NY**
Doctoral Researcher, *Principal Investigator:* Dr. Ignacio Saez, PhD — January 2022-present

- Designed intracranial electrophysiology experiments integrating behavioral task development with neural recordings, gaining hands-on experience with multimodal recording hardware.
- Conduced signal processing and time–frequency analyses (MNE-Python) of intracranial electrophysiology.
- Developed machine learning models for high-dimensional time-series data (scikit-learn), advancing multimodal analyses across behavioral and neural domains.

Dynamics of Cognition and Affect Lab, Icahn School of Medicine (ISMMS) — **New York City, NY**
Doctoral Researcher, *Principal Investigator*: Dr. Angela Radulescu, PhD — January 2022-present

- Designed and implemented behavioral experiments, generating novel datasets and developing RL-based cognitive models to characterize human decision-making strategies.
- Developed deep learning pipelines (PyTorch) to decode human attention from behavioral time-series data, improving decoding accuracy from 20% to 85%.
- Led a theoretical–experimental collaboration from project ideation through data collection, model design/optimization, and result dissemination, bridging cognitive theory with systems neuroscience.

Schiller Lab, ISMMS — **New York City, NY**
PhD Rotation Student, *Principal Investigator:* Dr. Daniela Schiller, PhD — October 2021- December 2021

- Developed behavioral data preprocessing pipeline to streamline workflows and ensure reproducibility.
- Applied unsupervised machine learning to identify clinically-relevant behavioral subgroups.

Affective Brain Lab, UCL & MIT — **London, UK**
Research Assistant, *Principal Investigator*: Dr. Tali Sharot, PhD — July 2020-September 2021

- Designed behavioral paradigms (JavaScript) and collected data from >600 participants via online platforms.
- Applied machine learning techniques (multilevel modeling, factor analysis) to analyze behavioral data and uncover patterns in human information-seeking behavior.

Mood and Personality Disorder Research Program, ISMMS — **New York, NY**
Research Assistant, *Principal Investigator:* Dr. Margaret McClure, PhD — September 2019-December 2019

- Conducted neuropsychological assessments to study factors shaping personality and mental health.
- Collaborated with clinicians and researchers to share findings with diverse audiences.

Women's Research Unit, Barts' and the London School of Medicine — **London, UK**
Research Assistant, *Principal Investigator:* Dr. Shakila Thangaratinam, MD PhD — June 2019-August 2019

- Led participant-centered clinical research focused on women's health, ensuring ethical, accessible, and meaningful engagement with diverse populations.
- Designed user-friendly data collection protocols to maximize clarity and usability.
- Collaborated with multidisciplinary teams to analyze behavioral and clinical data and refine study design.

McClure Clinical Psychology Lab, Fairfield University — **Fairfield, CT**
Research Assistant, *Principal Investigator*: Dr. Margaret McClure, PhD — September 2018-May 2020

- Collected behavioral data and performed statistical analyses.

OPEN-SOURCE RESEARCH SOFTWARE CONTRIBUTIONS

NeuroCluster – Lead Developer**;** *under review Journal of Open Source Software.*

- Developed a novel statistical framework for analyzing multimodal time-series data, with a focus on linking behavior and neurophysiology.
- leveraging MNE, NumPy, SciPy, and Statsmodels for model implementation and analysis; pytest for testing; and matplotlib/Jupyter for visualization and communication.

JOURNAL AND CONFERENCE PAPERS

Maher, C., Saez, I., Radulescu, A. Deep learning approach for decoding latent human attention across cognitive models. (2024). *(in preparation)*

Maher, C., Qasim, S., Martinez, L., Saez, I., Radulescu, A. Investigating the neuronal dynamics of state representation maintenance in humans. (2024). *(in preparation)*

Maher, C., Qasim, S., Martinez, L., Saez, I., Radulescu, A. The neuronal basis of hypothesis testing for state representation learning in humans. (2024). *(in preparation)*

Maher, C.*, Skular, A.*, Qasim, S., Saez, I. NeuroCluster: A Python toolbox for nonparametric cluster-based statistical testing of neurophysiological data with respect to continuous predictors. (*under review – Journal of Open Source Software*) *co-first author

Maher, C., Qasim, S., Nunez, L., Saez, I., Radulescu, A. Linking neural representations to adaptive behavior with cognitive modeling. *ICLR 2025 Representational Alignment Workshop*. *Catalyst Prize nominee.

Maher, C., Qasim, S., Martinez, L., Saez, I., Radulescu, A. Intracranial recordings reveal neural encoding of attention-modulated reinforcement learning in humans. (2024). *Computational Cognitive Neuroscience (CCN)*, Boston, USA.

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-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

Cummins, D. D., Schulman, Z., **Maher, C.,** Tortolero, L., Saad, A., Nunez Martinez, L., Davidson, R. J., Marcuse, L. V., Saez, I., & Panov, F. (2024). Influence of mindfulness meditation on intracranial EEG parameters in epileptic and non-epileptic brain areas. *Epilepsy & Behavior*, 161, 110150. doi.org/10.1016/j.yebeh.2024.110150

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

Maher, C. (2021). The benefits of mindfulness for university students. *Building Health Academic Communities Journal*, 5(1):42-57. doi.org/10.19061/bhac.v5il.7735

COMMENTARIES

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

Maher, C. Are the answers to effective mental health care in cells or sonnets? *BraiNY and the Greater NYC Chapter of the Society for Neuroscience blog*.

CONFERENCE PRESENTATIONS

Maher, C., Qasim, S., Tostaeva, G., Fedor, P., Nunez, L., Saez, I., Radulescu, A. Neuronal dynamics underlying the maintenance and formation of state representations in humans. Abstract accepted at Human Single-Neuron Meeting (*upcoming* Pasadena, CA November 2025).

Maher, C., Qasim, S., Nunez, L., Saez, I., Radulescu, A. Decoding Latent Attention Across Cognitive Models. Poster presented 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. Linking neural representations to adaptive behavior with cognitive modeling. Poster presented at the ICLR Representational Alignment Workshop (Singapore, MY April 2025).

Maher, C., Qasim, S., Nunez, L., Saez, I., Radulescu, A. Intracranial recordings uncover neuronal dynamics of multidimensional reinforcement learning. Poster presented 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 attention-modulated 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., Radulescu, A., Saez, I. Investigating the neural basis of human representation learning with intracranial EEG. Poster presented at the NIH BRAIN Initiative Meeting (Washington DC, June 2024).

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).

Maher, C., Nunez, L., Radulescu, A., Saez, I., The neural basis of representation learning in the human prefrontal cortex. Poster presented at the Freidman Brain Institute Neuroscience Retreat (New York, NY May 2023).

Maher, C., Gu, X., Radulescu, A., Saez, I. The neural basis of representation learning in the human prefrontal cortex. Poster presented at Society for Neuroscience Annual Meeting (San Diego, November 2022).

Maher, C., Gu, X., Radulescu, A., Saez, I., Investigating the neural correlates of task-state representation learning. Poster presented at the Freidman Brain Institute Neuroscience Retreat (New York, NY May 2022).

Maher, C. (April 2020). The Benefits of Mindfulness for University Students. Poster presented at the 2020 Fairfield University Innovative Research Symposium (virtual, April 2020).

Maher, C., Karnes, J., Smith, E., McClure, M. Childhood Trauma and Social Cognitive Deficits in Individuals with IPV and BPD. Poster presented at the Fairfield University Sigma Xi 2020 Research Symposium (virtual, April 2020) and at the 2020 Eastern Psychological Association Annual Meeting (virtual, April 2020).

INVITED TALKS

Columbia University Center for Theoretical Neuroscience (*upcoming* Sept. 2025)
Columbia University Systems Intelligence Laboratory (*upcoming* Sept. 2025)
Fairfield University Undergraduate Seminar: Pathways to Success in Psychological Sciences (*upcoming* Sept. 2025)
Mount Sinai Lipschultz Center Symposium on Cognitive Neuroscience (*upcoming* Sept. 2025)
Multi-Disciplinary Conference on Reinforcement Learning and Decision Making Neuroscience Workshop (June 2025)
Friedman Brain Institute Neuroscience Retreat (May 2025)
SINAI4US Research Symposium (October 2024)
Cognitive Computational Neuroscience Conference (July 2024)
UTSW Neurosurgical Brain Mapping and Restoration Laboratory (July 2024)
Gordon Research Seminar: Neurobiology of Cognition (July 2024)
ViA Forum for Sustainable Visions in Action: Science Communication Series (June 2024)
UCL x Trailblazer's Mentoring: Behavioral Insights for Social Good (September 2021) - organizer and panel chair

INDUSTRY, OUTREACH, & TRANSLATIONAL RESEARCH EXPERIENCE

Handshake AI **Remote**
AI Research Fellow September 2025-present

- Partnered with leading AI companies in evaluating LLM reasoning and safety.
- Designed and reviewed neuroscience-focused prompts to ensure accuracy and alignment with human values.
- Provided feedback on LLM performance to strengthen safe, reliable AI at the frontier of model development.

NeuroNYC **New York, NY**
Communications and Outreach Co-Lead May 2025-*present*

- Facilitate collaboration across NYC neurotech companies by hosting industry and outreach events.

Come be BraiNY **New York, NY**
Volunteer September 2021 – *present*

- Volunteer at outreach events across NYC, contribute educational content to promote public engagement.

Mount Sinai Mentoring in Neuroscience Discovery (MINDS) **New York, NY**
Co-President | August 2023-September 2024 September 2021 – *present*
Instructor | September 2021-present

- Led ISMMS's largest student organization delivering neuroscience education to 100s of NYC students.

Mount Sinai Center for Excellence in Youth Education **New York, NY**
Teaching Fellow November 2022 – August 2023

- Taught 100+ hours of neuroscience to 150 middle and high school students.
- Developed the first all-girls neuroscience afterschool program at the Manhattan Center for Science and Math.

BioBus **New York, NY**
Community Scientist Fellow January 2022-May 2022

- Designed and led hands-on neuroscience outreach programs for K–12 students in underserved NYC communities, fostering early engagement with STEM through interactive, inquiry-based learning.

UCL Behavioral Insights Team **London, UK**
Project Leader January 2021-August 2021

- Led an interdisciplinary team conducting qualitative and quantitative research on student wellbeing, delivering actionable insights that informed university policy while securing and managing grant funding for the project.

Solace Women's Aid **London, UK**
Counselling Service Assistant June 2020 – September 2021
Counseling Service Intern January 2019-August 2019

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

Additional Service: New York Computational Psychiatry Course 2024 (volunteer), Mount Sinai Center for Computational Psychiatry Speaker Series 2022-2023 (organizer and moderator), ISMMS Graduate Admissions (student interviewer & events volunteer), ISMMS PhD Mentor 2025-2026 (mentor), Manhattan Area Learning Meeting (organizer)

HONORS AND AWARDS

Catalyst Prize nominee (ICLR Representational Alignment Workshop)	2025
Travel Award (COSYNE)	2025
Travel Award (Gordon Research Conference)	2024
Graduate Travel Award (ISMMS)	2024, 2025
Teaching Excellence Award (ISMMS)	2023
CEYE Teaching Fellowship (ISMMS)	2022 -2023
BioBus Community Scientist Fellowship	2022
Icahn School of Medicine Doctoral Fellowship (ISMMS)	2021
Changemakers Project Grant (University College London)	2021
Elizabeth Decamp McInerney Scholarship for Undergraduate Summer Research (Fairfield University)	2020
President, Psi Chi (Fairfield University)	2019-2020
Sigma Xi – Scientific Research Honor Society (Fairfield University)	2016-2020
Psi Chi – Psychology Honor Society (Fairfield University)	2016-2020
Alpha Epsilon Delta – Health Pre-Professional Honor Society (Fairfield University)	2016-2020
Magis Scholar's Travel Grant (Fairfield University)	2019
Dean's List (Fairfield University)	2016-2020
Magis Scholarship – full merit-based academic scholarship (Fairfield University)	2016-2020

TEACHING EXPERIENCE

2023, 2024, 2025 Effective Science Communication, ISMMS – graduate teaching assistant
2024 MERRIT Engineering Fellowship Program, ISMMS – instructor
2024 Biostatistics, ISMMS – graduate teaching assistant
2023 Biomedical Science Enrichment Program, ISMMS - instructor
2022 Computational Neuroscience, Neuromatch Academy – teaching assistant

WORKSHOPS ORGANIZED

Manhattan Area Learning Meeting (co-organizer; *upcoming* Spring 2026)

MENTORSHIP EXPERIENCE

2024 Hailey Rosenblum (PhD rotation student, Saez Lab – ISMMS)
2024 Claudia Valenzuela (MS rotation student, Saez Lab - ISMMS)
2024 Nakul Iyer (high school research assistant, Summer Program in Computational Psychiatry – ISMMS)
2023 Sheona Fujimori (undergraduate research assistant, Saez Lab - ISMMS)
2022 Martina Lund (high school research assistant, Summer Program in Computational Psychiatry - ISMMS)

EDUCATION

Icahn School of Medicine at Mount Sinai | PhD | Neuroscience - GPA: 4.0/4.0 **New York, NY**
Supervisor(s): Angela Radulescu, PhD; Ignacio Saez, PhD *Expected September 2026*
Relevant coursework: Machine Learning for Biomedical Sciences, Fundamentals of Computational Psychiatry
Thesis: *"Investigating the neuronal mechanisms underlying state representation learning in humans."*

University College London | MSc | Cognitive Neuroscience - GPA: Distinction (4.0/4.0 equivalent) **London, UK**
Supervisor: Professor Tali Sharot, PhD September 2020 – September 2021
Relevant coursework: Statistics for Psychology, Neuroimaging, Neuroanatomy

Thesis: *"Anticipating information's impact on internal states and external reality: implications for adaptive information-seeking and psychopathology."*

Fairfield University | BS | Psychology & Health Studies - Major GPA: 3.91/4.0 **Fairfield, CT**
Supervisor: Dr. Margaret McClure, PhD **full merit-based academic scholarship recipient* Sept. 2016 – May 2020
Relevant coursework: Neuropsychology, Cognitive Psychology, Neuroendocrinology, Statistics & Research Methods
Thesis: *"Cognitive mechanisms of risk and resilience to psychopathology following early childhood adversity."*

Additional Education:
Queen Mary University of London – *Study Abroad Semester* (spring 2019)
- Nominated by department to participate in applied psychology internship program.

Barcelona Summer School for Advanced Modeling of Behavior (summer 2023)
- Selected (10% acceptance rate) for specialized training course in behavioral modeling.

NeuroHackademy, University of Washington (summer 2023)
- Summer school on data science and machine learning for neural data analysis.

PEER REVIEW

Journal of Open-Source Software
Journal of Open-Source Research Software
Nature Scientific Reports
Nature Human Behavior
Computational and Systems Neuroscience (COSYNE)

SKILLS

Programming & Statistical Analysis: Python, R, MATLAB, JavaScript
Experimental Design & Web-Based Research Tools: jsPsych (JavaScript), PsychoPy (Python), Qualtrics, Gorilla, Pavlovia, Prolific, REDCap
Machine/Deep Learning: Python (PyTorch, TensorFlow, scikit-learn)
Time-Series & Neural Data Analysis: MNE (Python), FieldTrip (MATLAB)
Data Visualization: Matplotlib, seaborn (Python); ggplot2 (R)
Software Tool Development: Developer of NeuroCluster (Python), an open-source package for neural time-series
Software Engineering & Collaboration: Git/GitHub
Clinical Research Certifications: NHS Good Clinical Practice (GCP)
Languages: English (native), Italian (fluent)