

# Gabrielle Kaili-May Liu

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## Curriculum Vita

### Education

**Yale University, 2023–Present**  
Ph.D. in Computer Science  
Advisor: Arman Cohan

**Massachusetts Institute of Technology, 2019–2023**  
S.B. in Mathematics with Computer Science  
S.B. in Brain and Cognitive Sciences  
GPA: 5.0/5.0

### Research Interests

Cognition-Inspired Foundation Models, Metacognition in LLMs, Alignment, AI Ethics

### Honors & Awards

Graduate Research Fellowship, National Science Foundation 2023-2028  
Teaching and Learning Award, MIT Department of Mathematics 2023  
\$5,000 Prize, Envisioning the Future of Computing, MIT Schwarzman College of Computing 2023  
Fung Scholar, Fung Foundation 2022  
Eloranta Fellow, MIT 2022  
Women and Mathematics Program, Institute for Advanced Study 2022  
SERC Scholar, MIT Schwarzman College of Computing 2021 & 2022  
Undergraduate Academic Award, MIT Department of Brain and Cognitive Sciences 2022 & 2023  
MIT International Science and Technology Initiatives Award 2020-2021, 2022, 2023  
First Place, Systems Software, Intel International Science and Engineering Fair (ISEF) 2019  
\$25,000 Winner, Top 40 Finalist, Regeneron Science Talent Search (STS) 2019  
\$25,000 Winner, Third Place, Siemens Competition 2017  
Research Science Institute Scholar (RSI) 2018  
Community Innovation Award, Society for Science 2018  
Intel Excellence in Computer Science Award 2016-2019

### Publications

**Liu, G.**, Shi, B., Caciularu, A., Szpektor, I., Cohan, A. MDCure: Scalable Synthetic Data Generation & Curation for Multi-Document Instruction-Following. Submitted to ARR October 2024.

<http://arxiv.org/abs/2410.23463>

Lee, H. H., **Liu, G.**, Chen, Y. C., Yeh, S. L. Exploring Quantitative Measures in Metacognition of Emotion. Scientific Reports 2024.

<https://rdcu.be/dwIct>

**Liu, G.** Perspectives on the Social Impacts of Reinforcement Learning with Human Feedback. 2023.

<https://arxiv.org/abs/2303.02891>

**Liu, G.** A Robot Rights Curriculum Informed by Western and Eastern Principles. MIT Social and Ethical Responsibilities of Computing Symposium 2023.

<https://robotrights.webflow.io/>

Schaeffer, R., **Liu, G.**, Du, Y., Linderman, S., & Fiete, I. R. Streaming Inference for Infinite Non-Stationary Clustering. ICLR Workshop on Agent Learning in Open-Endedness 2022 & Conference on Lifelong Learning Agents 2022.

<https://arxiv.org/abs/2205.01212>

Schaeffer, R., Du, Y., **Liu, G.**, & Fiete, I. Streaming Inference for Infinite Feature Models. ICML 2022.

<https://proceedings.mlr.press/v162/schaeffer22a.html>

Lee, H. H., **Liu, G.**, Yeh, S. L. I know I'm happy, and I'm right: Metacognition of emotion. European Conference on Visual Perception 2021.

[https://journals.sagepub.com/toc/peca/50/1\\_suppl](https://journals.sagepub.com/toc/peca/50/1_suppl)

**Liu, G.** Weight Friction: A Simple Method to Overcome Catastrophic Forgetting and Enable Continual Learning. 2019.

<https://arxiv.org/abs/1908.01052>

**Liu, G.** Evaluating Gammatone Frequency Cepstral Coefficients with Neural Networks for Emotion Recognition from Speech. 2018.

<https://arxiv.org/abs/1806.09010>

## Projects

**Trustworthy Collaborative AI**, Prof. Harold Soh, CLeAR Lab, Summer 2022  
*Department of Computer Science, National University of Singapore, Queenstown, Singapore*

**Computation and Learning with Brain Assemblies**, Prof. Tomaso Poggio, Projects in the Science of Intelligence, Spring 2022

*Department of Brain and Cognitive Sciences, MIT, Cambridge, MA*

**Efficient Streaming Inference for Infinite Nonparametric Models**, Prof. Ila Fiete, Fiete Lab, Fall 2021-Spring 2022

*Department of Brain and Cognitive Sciences, MIT, Cambridge, MA*

**Metacognition of Emotion**, Prof. Su-Ling Yeh, EPA Lab, Summer 2020-Summer 2021

*Department of Psychology, National Taiwan University, Taipei, Taiwan*

**Lifelong and Meta-Reinforcement Learning for Structured Action Spaces**, Prof. Josh Tenenbaum, CoCoSci Lab, Fall 2019-Spring 2020

*Department of Brain and Cognitive Sciences, MIT, Cambridge, MA*

**A Mathematical Framework for Learning Shared Representations for Transfer Learning**, Prof. Lizhong Zheng, Research Science Institute, Summer 2018

*Department of Electrical Engineering and Computer Science, MIT, Cambridge, MA*

**Preventing Domestic Violence Using Emotion Recognition in Speech**, 2018

**Neural Networks without Multiplications**, 2017

**Anthropomorphic Facial Emotion Recognition and Generation Objective through Machine Learning**, 2017

**Recognizing Emotions Using a Physiologically Based Facial Landmark Detection Model and Machine Learning**, 2016

## Academic Service

ICLR 2025, AAAI 2025, LLMAgents @ ICLR 2024, ICML 2024, IJCAI 2024, JASA-EL 2023, NeurIPS 2023, MIT Committee on Curricula 2022-2023, NeurIPS 2021, NeurIPS 2020, ICML 2020

## Teaching

**Instructor, Fundamentals of Group Theory**, Spring 2021, Spring 2022, Spring 2023  
*MIT PRIMES Circle, Department of Mathematics, MIT, Cambridge, MA*

**Lab Assistant, 6.036 Introduction to Machine Learning**, Spring 2021  
*Department of Electrical Engineering & Computer Science, MIT, Cambridge, MA*

**Teaching Assistant, Fundamentals of Scientific Writing**, Summer 2019  
*Research Science Institute (RSI), MIT, Cambridge, MA*

**Grader, 18.02 Multivariable Calculus**, Spring 2023  
*Department of Mathematics, MIT, Cambridge, MA*

## Outreach & Activities

**Mentorship Program, Women and Gender Minorities in Science at Yale**, 2023-2024  
Facilitating the professional success of young women and gender minorities in STEM

**Editor-in-Chief, MIT Undergraduate Research Journal**, 2021 & 2022  
MIT's only peer-reviewed scientific journal serving the undergraduate population

**Mentorship Program Director, Women in EECS**, 2021-2022  
A community for women in EECS that supports, encourages, and empowers them to succeed

**Resources Chair, MITxHarvard Women in AI, 2021-2022**

A supportive community for cisgender women, transgender women, genderqueer individuals, and non-binary individuals pursuing studies or research in AI and machine learning at MIT and Harvard

**Representative, Dean's Action Group on Social & Ethical Responsibilities of Computing, 2020**  
Action group to create pedagogical materials for use across all levels of instruction, in order facilitate the development of responsible "habits of mind and action" for those who create and deploy computing technologies, and the creation of technologies in the public interest

**Vice President of Operations, Delta Phi Epsilon, 2021-2022**

International sorority at MIT whose mission is to equip members with the leadership skills to create positive change in the community

**EMT, MIT Emergency Medical Service, 2020-2021**

Organization that provides exception emergency medical care and education to MIT and the surrounding community

**Internships & Programs**

MISTI-Taiwan, MIT, Summer 2023  
Women and Mathematics Program, Institute for Advanced Study, Summer 2022  
MISTI-Singapore, MIT, Summer 2022  
MISTI-Taiwan, MIT, Summer 2020-Summer 2021  
Canada/USA Mathcamp, Summer 2019  
Research Science Institute, CEE, Summer 2018  
Canada/USA Mathcamp, Summer 2017  
TN Governor's School for Computational Physics, Summer 2017  
MathILy, Summer 2016  
MathPath, Summer 2015

**Technical Skills**

**Languages**

Python, Julia, SQL, Linux, Java, MATLAB, R, Fortran, Rust, LaTeX

**Platforms**

GCP, AWS, HuggingFace, GitHub, Google Colab, JupyterLab, slurm, docker, Jira, Confluence

**Libraries**

PyTorch, trainer, transformers, trl, accelerate, deepspeed, unsloth, bitsandbytes, peft, wandb, TensorFlow, TensorBoard, Keras, OpenCV, dlib, scikit-learn, scipy, numpy, matplotlib, pandas, seaborn, Pyro, multiprocessing