

Nathan Cloos

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 github.com/nacloos

Education

MIT PhD in Brain and Cognitive Science 2023–present
with Ila Fiete on sample-efficient modular architectures

UCLouvain M.Sc., B.Sc. in Engineering (Applied Mathematics & Physics) 2017–2023
with Frederic Crevecoeur (UCLouvain) & Robert Yang (MIT) on multi-system brain models

Selected projects

Self-play LLM game generation (collaboration with Phillip Isola at MIT CSAIL):
self-improvement loop with [game generator](#) and [game player](#)
fine-tuned 120B model with Tinker; awarded \$5k Tinker Research Program grant
prelim results show generated games are increasingly challenging after training on 10k+ games

LLM social reasoning (MIT Sandbox):
hackathon finalist awarded trip to MIT AI Conference in Palo Alto
building 1M dynamic social environments to improve [LLMs' social reasoning](#), including theory of mind, negotiation and persuasion skills

Baba Is AI (ICML 2024 LLMs and Cognition Workshop):
built [environments](#) for grounded reasoning based on the game Baba Is You
evaluated LLMs at playing the games from text+image inputs

Employment

Microsoft Research intern Summer 2025
built 120 game dev and game testing tasks to benchmark tool-use coding agents including Claude Code, GitHub Copilot, Codex
deployed it to Microsoft Azure's infrastructure with distributed and containerized execution

Technion research assistant in Omri Barak's lab 2022–2023
mechanistic interpretability study of RNNs trained on neuro-inspired tasks

MIT research assistant in Robert Yang's lab 2021–2022
built a [framework](#) that standardizes and compares over 207 representational similarity metrics from 32 papers

Ficos S.A. software engineer Summers 2018–2019
developed ERP and tracking software for customers in the construction sector

Publications

[Differentiable optimization of similarity scores between models and brains](#)
Nathan Cloos, Moufan Li, Markus Siegel, Scott L. Brincat, Earl K. Miller, Guangyu Robert Yang, Christopher J. Cueva.
oral presentation: Cosyne 2024 ICBINB Workshop, CCN 2024. poster: ICLR 2025

[A Framework for Standardizing Similarity Measures in a Rapidly Evolving Field](#)
Nathan Cloos, Guangyu Robert Yang, Christopher J. Cueva

oral presentation: Neurips 2024 UniReps Workshop

[Automating and Validating Agent and Environment Code Generation with Large Language Models](#)

Nathan Cloos, M Ganesh Kumar, Adam Manoogian, Christopher J Cueva, Shawn A. Rhoads
poster presentation: Neurips 2024 Behavioral ML Workshop

[Baba Is AI: Break the Rules to Beat the Benchmark](#)

Nathan Cloos, Meagan Jens, Michelangelo Naim, Yen-Ling Kuo, Ignacio Cases, Andrei Barbu,
Christopher J Cueva

poster presentation: ICML 2024 LLMs and Cognition Workshop

[Scaling up the Evaluation of Recurrent Neural Network Models for Cognitive Neuroscience](#)

Nathan Cloos, Moufan Li, Guangyu Robert Yang, Christopher J. Cueva
poster presentation: Cosyne 2022, CCN 2022, Bernstein 2022

Awards

2025: MIT Eugene Stark Fellowship
2025: MIT Envisioning the Future of Computing Prize
2024: MIT Henry E. Singleton Fellowship
2023: B.A.E.F. Honorary Fellowship
2021: UCLouvain Lhoist Berghmans Chair Scholarship

Miscellaneous

designed and built a [can-sized satellite](#) that won the national CanSat Belgium competition,
organized by the European Space Agency, and competed in the European finals