

# Nathan Cloos

PHD STUDENT · MIT BRAIN AND COGNITIVE SCIENCES

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## Education

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### MIT

PHD MIT BRAIN AND COGNITIVE SCIENCES

2023 - present

Working in computational neuroscience and AI

### UCLouvain

Belgium

M.SC. MATHEMATICAL ENGINEERING

2020 - 2023

- Thesis advisors: Robert Yang (MIT), Frédéric Crevecoeur (UCLouvain)
- Relevant coursework: Mathematical Models in Neuroscience, Nonlinear Dynamical Systems, Statistical Field Theory, Critical Phenomena in Physics, Category Theory

### UCLouvain

Belgium

B.SC. ENGINEERING

2017 - 2020

- Major in Applied Mathematics
- Minor in Physics
- Relevant coursework: Introduction to Neurosciences, Philosophy of Language, Multilinear Algebra and Group Theory, Statistical Physics

## Publications

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**Nathan Cloos**, Guangyu Robert Yang, Christopher J. Cueva. 2024. A Framework for Standardizing Similarity Measures in a Rapidly Evolving Field.

**Oral presentation:** Neurips 2024 UniReps Workshop.

**Nathan Cloos**, M Ganesh Kumar, Adam Manoogian, Christopher J Cueva, Shawn A. Rhoads. 2024. Automating and Validating Agent and Environment Code Generation with Large Language Models.

Poster presentation: Neurips 2024 Behavioral ML Workshop.

**Nathan Cloos**, Meagan Jens, Michelangelo Naim, Yen-Ling Kuo, Ignacio Cases, Andrei Barbu, Christopher J Cueva. 2024. Baba Is AI: Break the Rules to Beat the Benchmark.

Poster presentation: ICML 2024 LLMs and Cognition Workshop.

**Nathan Cloos**, Moufan Li, Markus Siegel, Scott L. Brincat, Earl K. Miller, Guangyu Robert Yang, Christopher J. Cueva. 2024. Differentiable optimization of similarity scores between models and brains.

**Oral presentation:** Cosyne 2024 ICBINB Workshop, CCN 2024.

Poster presentation: ICLR 2024 Re-Align Workshop, ICLR 2025.

**Nathan Cloos**, Moufan Li, Guangyu Robert Yang, Christopher J. Cueva. 2022. Scaling up the Evaluation of Recurrent Neural Network Models for Cognitive Neuroscience.

Poster presentation: Cosyne 2022, CCN 2022, Bernstein 2022.

## Professional Experience

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### Microsoft Research

INTERNSHIP

summer 2025

Building a game development benchmark for GitHub Copilot.

### Technion

RESEARCH ASSISTANT IN OMRI BARAK'S LAB

2022 - 2023

Studying emergent specialization in modular Recurrent Neural Network models.

### MIT

RESEARCH ASSISTANT IN ROBERT YANG'S LAB

2021 - 2022

Developing a pipeline to train and evaluate Recurrent Neural Networks on many tasks and neural datasets.

## Ficos S.A.

### SOFTWARE ENGINEER

Developing ERP software for customers in the construction sector.

summer 2018 - 2019

## Summer Schools

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- 2024 **Analytical Connectionism Summer School (ACSS)**, Flatiron Institute, US
- 2023 **Computational Approaches to Memory and Plasticity (CAMP)**, IISER Pune, India
- 2023 **The Computational Summer school on Modeling Social and collective behavior (COSMOS)**, Konstanz, Germany
- 2022 **EITN Fall School in Computational Neuroscience**, Paris, France
- 2022 **International Interdisciplinary Computational Cognitive Science Summer School (IICCCSS)**, Tübingen, Germany
- 2022 **MIT Brains, Minds & Machines (BMM) Summer Course**, Woods Hole, US
- 2020 **Neuromatch Academy**, Online
- 2020 **Regularization Methods for Machine Learning (RegML)**, Genova, Italy (online)

## Teaching Experience

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- 2025 **9.49 Neural Circuits for Cognition (MIT)**, Teaching Assistant
- 2025 **9.40 Intro to Neural Computation (MIT)**, Teaching Assistant
- 2021 **Neuromatch Academy (Online)**, Teaching Assistant
- 2019-2020 **Linear Algebra (UCLouvain)**, Teaching Assistant

## Awards, Fellowships, & Grants

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- 2025 **Eugene Stark (1968) Fellowship**, MIT
- 2024 **Henry E. Singleton (1940) Fellowship**, MIT
- 2023-2024 **B.A.E.F. Honorary Fellowship**, B.A.E.F.
- 2021 **Lhoist Berghmans Chair Scholarship**, UCLouvain

## Extracurricular Achievements

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- 2017 **Winner of EBEC Engineering Challenge**, BEST Louvain-la-Neuve
- 2016-2017 **Represented Belgium at the European Cansat competition**, European Space Agency
- 2015-2016 **Winner of Cansat Belgium**, Innoviris