

Hayden R. Johnson

Numerical Analysis and Applied Math Unit
VIB Center for AI & Computational Biology

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Education

PhD Student, KU Leuven Computer Science	Leuven, Belgium 2025–present
Predoctoral Program, KU Leuven Biomedical Science (cum laude)	Leuven, Belgium 2024–2025
Bachelor of Science, University of Minnesota Computer Science (emphasis Artificial Intelligence)	Minneapolis, Minnesota 2019–2023
Exchange Semester, University of Amsterdam Exchange program in Artificial Intelligence	Amsterdam, Netherlands 2022

Research Experience

Doctoral Researcher VIB Center for AI & Computational Biology Supervised by Prof. Pedro Goncalves	Leuven, Belgium 2025–present
Predoctoral Researcher Neuro-Electronics Research Flanders (NERF) Supervised by Prof. Pedro Goncalves	Leuven, Belgium 2024–2025
Post-Baccalaureate Researcher UMN Center for Magnetic Resonance Research (CMRR) Supervised by Prof. Thomas Naselaris	Minneapolis, MN 2023–2024
Machine Learning Research Intern Northwest Evaluation Association (NWEA) Supervised by Dr. S. Thomas Christie & Prof. Anna Rafferty	Remote 2022–2023
Undergraduate Research Assistant UMN Center for Cognitive Sciences Supervised by Prof. Paul Schrater	Minneapolis, MN 2022–2023
Laboratory Technician (Physics) UMN Physics Department x Fermilab	Minneapolis, MN 2020–2021

Publications

In preparation.....

Hayden R. Johnson, Anastasia N. Krouglova, Hadi Vafaii, S. Thomas Christie, Jacob Yates*, Pedro J. Gonçalves* (2026). Inferring response times of perceptual decision with Poisson variational autoencoders. *Under review*

Peer-reviewed articles.....

Anastasia N. Krouglova, **Hayden R. Johnson**, Basile Confavreux, Michael Deistler, Pedro J. Gonçalves (2026). Multifidelity Simulation-based Inference for Computationally Expensive Simulators. *ICLR*

Hayden R. Johnson, Anastasia Krouglova, Hadi Vafaii, Jacob Yates*, Pedro J. Gonçalves* (2025). Inferring response times of perceptual decision with Poisson variational autoencoders. *NeurIPS workshop: Data on the Brain & Mind*

S. Thomas Christie, **Hayden R. Johnson**, Paul Schrater (2023). Information-Theoretic Neural Decoding Reproduces Several Laws of Human Behavior. *Open Mind*

S. Thomas Christie, **Hayden R. Johnson**, Carson Cook, Garron Gianopoulos, Anna Rafferty (2023). LENS – Deep Diagnostic Modeling for Educational Assessment. *ACM Learning@Scale*

Selected refereed abstracts

Hayden R. Johnson, Anastasia N. Krouglova, Hadi Vafaii, Jacob Yates*, Pedro J. Gonçalves* (2026). Inferring response times of perceptual decisions with Poisson variational autoencoders. *COSYNE*

Hayden R. Johnson, S. Thomas Christie (2024). Likelihood-free parameter estimation of neural simulations. International Conference on the Mathematics of Neuroscience and AI, *Neuromonster*

Hayden R. Johnson, Thomas Naselaris (2024). A Resource Rational Perspective on Mental Imagery. Collaborative Research in Computational Neuroscience PI Meeting, *CRCNS*

Talks

Redwood Center for Theoretical Neuroscience, UC Berkeley; <i>invited talk</i>	Apr 2026
NeuroCog: Artificial Intelligence and the Human Brain; <i>contributed talk</i>	Nov 2025
UCL & VIB Optical Biology Conference; <i>invited talk</i>	Aug 2025
Project Encephalon Student Seminar; <i>invited talk</i>	Aug 2020

Teaching

Teaching Assistant , Calculus	KU Leuven, Fall 2025
Teaching Assistant , Algorithms and Data Structures	Univ. of Minnesota, Fall 2020

Mentorship

Zina Barseghyan , M.Sc. thesis in bioinformatics	2026–27
Arno Genicot , M.Sc. thesis in mathematical engineering	2025–26
Matties Roofthoof , M.Sc. thesis in mathematical engineering	2025–26
Merel Haenraets , M.Sc. thesis (now Ph.D. student at Univ. of Edinburgh)	2024–25
Elizabeth Alene , research intern (now Morehead-Cain Scholar at UNC Chapel Hill)	2023–24

Service

Organizer , VIB Computational and Systems Neuroscience group	2025–present
Reviewer , NeurIPS workshop: Data on the Mind and Brain	2025
Volunteer , International Conference on the Mathematics of Neuroscience and AI	2024
Volunteer , Computational Psychiatry Conference	2023

Training Courses

CAJAL NeuroAI Summer School – Champalimaud Centre, Lisbon, Portugal	2025
Generative Models Summer School – Inria Centre, Université Côte d'Azur, France	2025
Topology for Data Science – Montana State University	2023
Neuromatch Academy – Online	2020

Awards

Travel Grant, Topology for Data Science – NSF & Montana State University	2023
Capstone Project Award – Schmidt Futures & UC Berkeley	2021
Undergraduate Fellow – Schmidt Futures & UC Berkeley	2021
Dean's List – University of Minnesota	4x

Technical Skills

Math & statistics: Machine learning, Bayesian inference, information theory, dynamical systems, optimization.

Programming: Python, Julia; git, bash, high-performance computing (SLURM).

Packages: sbi, jaxley, PyTorch, JAX, PyMC, matplotlib, pandas, scikit-learn.

References

Pedro J. Gonçalves

Associate Professor & Group Leader, KU Leuven & NERF (Belgium)

Jacob Yates

Associate Professor of Optometry and Vision Science, UC Berkeley (USA)

Paul Schrater

Professor of Computer Science & Psychology, University of Minnesota (USA)