

THOMAS M. GAUL

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EDUCATION

University of Connecticut Health Center, Farmington, CT *2025–Present*
Ph.D. in Biomedical Science (Systems Biology)

Indiana University Bloomington, Bloomington, IN *2021–2025*
B.S. in Cognitive Science

- Thesis: *Biological Organisation and Viability: A Theory of Autopoiesis in Cellular and Euclidean Automata*. Committee: Dr. Randall D. Beer (Chair), Dr. Luis H. Favela, Dr. Eduardo J. Izquierdo.
- Departmental Honors in Cognitive Science
- Major concentration in Computation
- Dean's List

PUBLICATIONS

1. **Gaul, T. M.**, & Izquierdo, E. J. (2025). Cognitive distinctions as a language for cognitive science: Comparing methods of description in a model of referential communication. *Artificial Life*, 31(3), 345–367. https://doi.org/10.1162/artl_a_00475
2. Beer, R. D., McShaffrey, C., & **Gaul, T. M.** (2024). Deriving the intrinsic viability constraint of an emergent individual from first principles. In A. Faíña, S. Risi, E. Medvet, K. Stoy, B. Chan, K. Miras, P. Zahadat, D. Grbic, & G. Nadizar (Eds.), *ALIFE 2024: Proceedings of the 2024 artificial life conference* (pp. 192–200). MIT Press. https://doi.org/10.1162/isal_a_00739
3. **Gaul, T. M.** (2024). Autopoiesis in RealLife Euclidean automata. In A. Faíña, S. Risi, E. Medvet, K. Stoy, B. Chan, K. Miras, P. Zahadat, D. Grbic, & G. Nadizar (Eds.), *ALIFE 2024: Proceedings of the 2024 artificial life conference* (pp. 818–826). MIT Press. https://doi.org/10.1162/isal_a_00723

HONOURS AND AWARDS

Outstanding Research Award, *Indiana University Cognitive Science*. *March 2025*

Outstanding Contribution Award, *Indiana University Cognitive Science*. *April 2024*

Robert J. Glushko Award for Outstanding Research in Cognitive Science, *Indiana University Cognitive Science*. *April 2023*

SERVICE

Midwest Undergraduate Cognitive Science Conference *Fall 2023 - Spring 2025*
Organizer

- Doing outreach to improve attendance over the previous year
- Managing finances to ensure secure funding

- Securing personal to present keynotes and judge student posters and presentations

Students of Cognitive Science

Spring 2024 - Spring 2025

Treasurer

- Purchasing necessary materials for every meeting to improve attendee experience
- Managing account funds to ensure continued financial support
- Organizing events for existing and prospective members

Academic Fairness Committee

Fall 2023

Committee Member

- Sat in hearings and voted to ensure academic integrity and fairness

PRESENTATIONS

1. **Gaul, T. M.** “Autopoiesis in RealLife Euclidean automata.” *2024 Artificial Life Conference*. Copenhagen, Denmark, 2024.
2. **Gaul, T. M.** “The biology and cognition of emergent individuals in RealLife Euclidean automata.” *Sixteenth Annual Midwest Undergraduate Cognitive Science Conference*. Indiana University Bloomington, IN, 2024.
3. **Gaul, T. M.** “Communication and embedded autonomy: a minimal model of referential communication.” *Fifteenth Annual Midwest Undergraduate Cognitive Science Conference*. Indiana University Bloomington, IN, 2023.

SKILLS AND INTERESTS

- **Languages:** Rust, C++, Wolfram Language, Python, Java, Bash, RISC-V Assembly
- **Software:** Linux, Mathematica, L^AT_EX, Inkscape, Matplotlib, NumPy, Git, Visual Studio Code, Vim
- **Mathematics:** Dynamical Systems Theory, Linear Algebra, Graph Limit Theory, Vector Calculus, Topology, Measure Theory
- **Areas of Interest:** Theoretical Biology, Autopoiesis, Viability, Cognitive Science, Computer Algebra Systems, Evolutionary Robotics, Philosophy of Science, Buddhist Philosophy