

Gabriel Juliano Severino

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Research Areas

Cognitive Science, Computational Neuroethology, Evolutionary Robotics, Simulation of Adaptive Behavior, Computational Neuroscience, Dynamical Systems, Bio-inspired Robotics, Complex Systems, Comparative Cognition, Evolutionary Computation.

Employment

2025-2026 **Instructor of Record**, *Indiana University Bloomington*

2022-2025 **Associate Instructor**, *Indiana University Bloomington*

Education

2021-2026 **Ph.D. in Cognitive Science (minor: Bioengineering)**

Indiana University Bloomington

Dissertation: "Closing the Theory-Experiment Loop using Brain-Body-Environment Models"

Committee: Drs. Ann-Sophie Barwich (chair), Randall D. Beer, Gregory Lewis, Aina Puce

2018-2020 **Bachelors of Arts in Cognitive Science and Philosophy**

Beloit College

2016-2018 **Associates of Arts**

William Rainey Harper Community College

Peer-Reviewed Publications & Conference Proceedings

1. **Severino, G. J.**, & Barwich, A.S. (2026). Sniffing, Physiology, and Search: Odor Navigation in Embodied Neural Networks. *Artificial Life*, 32(1), 46–61. <https://doi.org/10.1162/ARTL.a.456>
2. **Severino, G. J.**, Winkler, S., Beer, D. R., Barwich, A.S., (2026). Social contingency in embodied neural networks relies on co-constructed dynamical mechanisms. *Philosophical Transactions of the Royal Society B: Biological Sciences*; 381 (1943): 20250098. <https://doi.org/10.1098/rstb.2025.0098>

3. **Severino, G. J.**, Winkler, S., Barwich, A.S., (2025). The Effect of Timescale Dependence on Dyadic Interactions, Proceedings of the Cognitive Science Society (Vol. 47).
<https://escholarship.org/uc/item/8h10z1w6>
4. Beer, D. R., Barwich, A.S., **Severino, G.J.** (2024). Milking a spherical cow: Toy models in neuroscience. European Journal of Neuroscience 60 (10), 6359-6374. <https://doi.org/10.1111/ejn.16529>
5. **Severino, G. J.**, Barwich, A.S. (2024). Evolution and Analysis of Respiratory Odor Navigation in Embodied Agents. ALIFE 2024: The 2024 Conference on Artificial Life.
https://doi.org/10.1162/isal_a_00751
6. Merritt, H., **Severino, G. J.**, and Izquierdo, E. J. (2024). The dynamics of social interaction among evolved model agents. Artificial Life, 1-24. https://doi.org/10.1162/artl_a_00417
7. **Severino, G. J.**, Merritt, H., Izquierdo, E. J. (2023). Between you and me: A systematic analysis of mutual social interaction in perceptual crossing agents. ALIFE 2023: The 2023 Conference on Artificial Life. https://doi.org/10.1162/isal_a_00609
8. **Severino, G. J.**, Laborde, Z., Barwich, A. S. (2023). The Degeneracy of Control Architectures in Cell Lineages: Implications for Tissue Homeostasis ALIFE 2023: The 2023 Conference on Artificial Life.
https://doi.org/10.1162/isal_a_00608
9. Barwich, A.S., **Severino, G. J.** (2023). The Wire is not the Territory: Understanding Representational Drift in Olfaction with Dynamical Systems Theory. Topics in Cognitive Science.
<https://doi.org/10.1111/tops.12689>
10. **Severino, G. J.**, Laborde, Z. C., Vanin, J. (2022). A Dynamical Analysis of Homeostatic Cellular Topologies. <https://doi.org/doi:10.21981/T401-HT56>
11. Izquierdo, E. J., **Severino, G. J.**, Merritt, H. (2022). Perpetual Crossers without Sensory Delay: Revisiting the Perceptual Crossing Simulation Studies. ALIFE 2022: The 2022 Conference on Artificial Life. https://doi.org/10.1162/isal_a_00509

Manuscripts Under Review & In Preparation

1. **Severino, G. J.**, Forbes E. J. (In Preparation) "Integrative Biology Using Brain-Body-Environment Models"
2. **Severino, G. J.**, Williams, J., Georgiadis, I. Barwich, A.S. (In Preparation). "SO-EEG: Sniff Olfactometry and Electroencephalography"

Talks & Presentations (* denotes invited talks)

2026	<i>Brain-Body-Environment Models for Research and Education in Netlogo</i> , Netlogo Conference. University of Illinois
2026	<i>*Social Contingency In Embodied Neural Networks</i> , Social Contingency Consortium, Princeton University. Virtual.
2025	<i>Effect of Timescale Dependence on Dyadic Interactions</i> , The Cognitive Science Society. San Francisco, CA.
2024	<i>Investigating Inter-agent Interaction</i> , Cognitive Lunch, Indiana University. Bloomington, IN.
2024	<i>Evolution and Analysis of Respiratory Odor Navigation in Embodied Agents</i> , The 2024 Conference on Artificial Life. Copenhagen, Denmark.
2024	<i>Play and Dynamics of Interaction</i> , Diverse Intelligences Summer Institute. St. Andrews, Scotland.
2023	<i>Between you and me: A systematic analysis of mutual social interaction in perceptual crossing agents</i> , The 2023 Conference on Artificial Life. Sapporo, Japan.
2023	<i>The Degeneracy of Control Architectures in Cell Lineages: Implications for Tissue Homeostasis</i> , The 2023 Conference on Artificial Life. Sapporo, Japan.
2022	<i>The Wire is not the Territory: Understanding Representational Drift in Olfaction with Dynamical Systems Theory</i> , Phil. and Neuro. at the Gulf. Pensacola, FL.

Honors & Awards

2026	Outstanding Teaching Award , Cognitive Science Program, Indiana University
2025	New Frontiers Cognitive Science Graduate Fellowship , Indiana University
2024	ECCE (Early Career Collaboration Enhancement) Award , Diverse Intelligences
2024	Best Paper Award , The 2024 Conference of Artificial Life
2024	ALife 2024 Student Scholarship , The 2024 Conference of Artificial Life
2024	Outstanding Student Publication , International Society for Artificial Life
2024	Diverse Intelligences Summer Institute Fellow , Diverse Intelligences
2024	Kishor and Pallavi Bhatt Expanding Horizons Fund , Indiana University
2023	Outstanding Research Award , Cognitive Science Program, Indiana University
2023	ALife 2023 Student Scholarship , The 2023 Conference of Artificial Life
2022	Fall Travel Award , College of Arts and Sciences, Indiana University
2020	Barbara and Jeffrey Bartlett Prize in Philosophy , Beloit College

Teaching

Instructor of Record

Indiana University Bloomington

Fall 2025 Foundations of Cognitive and Information Science (Cognitive Science-Q 240)
Spring 2025 Humans, Beasts, and Bots (Human Biology-B 400)

Associate Instructor

Indiana University Bloomington

Fall 2023 Foundations of Cognitive and Information Science (Cognitive Science-Q 240)
Fall 2022 Foundations of Cognitive and Information Science (Cognitive Science-Q 240)
Spring 2022 Cognition and Human Origins (College of Arts and Sciences-C 105)

Teaching Assistant

Beloit College

Spring 2019 Logic (Philosophy-100)

Teacher

2018-2020 McNeel Intermediate School, Beloit WI

Mentorship

2026- Will Granju (Computer Science), Nathaniel Kurosky (Cognitive Science)
2024- Leah Nozick (Cognitive Science), Evan Spice (Cognitive Science)
2022-2025 Emma Pietras (Cognitive Science), Karina Grabine (Cognitive Science)
2022-2024 Autumn Harmon (Neuroscience)

Peer-Review

For journals such as: Topics in Cognitive Science (topiCS), European Journal of Neuroscience, Artificial Life, Adaptive Behavior, MetaScientia, and Royal Society Open Science.

Committee & Volunteer Work

2026	Executive Director and Co-Founder , Agora Institute of Integrative Biology
2023-	Writer and Illustrator , Artificial Life Newsletter, International Society for Artificial Life
2023-2025	Chair , Emerging Researchers in Artificial Life, International Society for Artificial Life
2018-2020	Co-Founder , Philosophy and Science for Children, McNeel Intermediate and Beloit College

Technical Skills

Languages: C++, Python, Mathematica, Matlab, JavaScript, XML

Software: Tensorflow, PyTorch, Keras, CompuCell3D, Antimony, Matplotlib, NumPy, SciPy, Networkx, OpenAI Lab, Git, LaTeX

Methods: Computational Modeling of Evolutionary and Adaptive Systems, Computational Bioengineering, Dynamical Systems Theory, Network Science, Artificial Intelligence, Linear Algebra, Information Theory, EEG, Olfactometry, Experimental Design.

References

Dr. Ann-Sophie Barwich
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Cognitive Science Program
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Dr. Randall D. Beer
Indiana University Bloomington,
Cognitive Science Program
rdbbeer@iu.edu

Dr. Robin Zebrowski
Beloit College,
Department of Cognitive Science
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