Noah Egan

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Education

Ph.D. in Evolutionary Biology, Stanford University September 2024 – Present

Planned concurrent M.S. in data science | GPA: 4.00

B.S. in Computer Science, Georgia Institute of Technology August 2020 – May 2024

Concentrations in AI and theoretical computer science | GPA: 3.97

Publications

1. Denton, K., Heinrich-Mora, E., **Egan, N.**, Feldman, M. (2025). Culture is not ecology. *Evolution and Human Behavior*.
2. Oh, S., Briones, J., Calvert, J., **Egan, N.**, Randall, D., & Richa, A. W. (2024). Single bridge formation in self-organizing particle systems. *International Symposium on Distributed Computing*.
3. **Egan, N.**, Peixoto, N., & Matto, H. (2020). Creating a Personalized Cognitive-Bias Modification Therapy Exercise in Virtual Reality Using Simulated Reaction Time Data. *Journal of Student-Scientists' Research*, 2.

In preparation

1. **Egan, N***., Zeng, H*., Platnick, J., Avinery, R., Bagheri, H., Li, S., Sasaki, T., Randall, D., Goldman, D. (2026). Multimodal Mechanisms of Self-Assembly in Ant Pontoon Bridging. *In preparation.*

Conference Submissions

1. **Egan, N.**, Zeng, H., Avinery, R., Li, S., Bagheri, H., Sasaki, T., & Goldman, D. (March 2023). Global coordination using local information in fire ant pontoon bridges. *Bulletin of the American Physical Society*.
2. **Egan, N.**, Zeng, H., Avinery, R., Bagheri, H., Li, S., Sasaki, T., Goldman, D. (January 2023). Global coordination using local information in fire ant pontoon bridge simulations. *Society of Integrative and Comparative Biology Meeting*.
3. Zeng, H., **Egan, N.**, Avinery, R., Li, S., Sasaki, T., Goldman, D. (January 2023). Building dynamics of self-assembly pontoon bridges in the fire ant, *Solenopsis invicta*. *Society of Integrative and Comparative Biology Meeting*.

Experience

Feldman Lab, Stanford University Sep 2024 – Present

Doctoral Researcher, Advisor: Professor Marc Feldman

Scaling of between-individual cultural differentiation with city size

- Developed metrics to measure how between-individual cultural differences scale with city size across three domains (books, movies, video games, up to ∼370K users)
- Found convergence on popular variants alongside divergence on niche ones in larger cities, developing a binary-vector population model to explain the split

Individual and collective change in chess and Go

- Measured shifts in players' opening move repertoires across 50 years of tournament records (3.45M chess, 116K Go games), decomposed population change into shared and individual components
- Found that chess change is driven by individual exploration while Go's post-AlphaGo spike reflects shared, population-wide adoption

Goldman Lab and Randall Lab, Georgia Institute of Technology Aug 2021 – May 2024

Undergraduate Research Assistant, Advisors: Professor Dana Randall, Professor Daniel Goldman

- Built a Markov-chain model of ant bridge formation and proved, with the research group, that its properties match experiments (published at DISC, co-author)
- Developed an agent-based model (C++) and computer-vision pipeline (MATLAB) to quantify and replicate experimental bridging behavior, validated by a confirmed experimental prediction
- Co-first author on a manuscript in preparation for PNAS (with experimentalist Dr. Haolin Zeng)

Levin Lab, Princeton University June 2023 – Aug 2023

Undergraduate Research Assistant, Advisors: Professor Simon Levin, Professor Jonathan Levine

- Built a spatial Lotka-Volterra model and mean-field PDE approximation, discovering coexistence-promoting spatial patterns that arise only under higher-order species interactions

NASA Goddard Space Flight Center June 2021 – Aug 2021

Intern

- Designed and built demo features for the Mixed Reality Exploration Toolkit (MRET) based on client feedback, and implemented a C# file reader to import CAD files into Unity

Service & Leadership

Founder, Collective Behavior Working Group, Stanford University Sep 2025 – Present

- Founded an interdisciplinary working group on collective behavior across multiple departments; organized meetings, selected papers, and invited speakers

Millennium Fellow Aug 2023 – Nov 2023

- Developed a sustainability-focused STEM careers curriculum and led outreach sessions for ∼80 high school students, as part of the UN-affiliated Millennium Fellowship (a leadership program for students pursuing social-impact projects)

Awards

1. NSF GRFP Honorable Mention 2024
2. Millennium Fellowship 2023
3. President's Undergraduate Research Award (PURA) 2022, 2023
4. PURA travel award 2022, 2023
5. Sidney Goldin Scholarship 2021–2024
6. National Merit Scholar 2019

Teaching

1. Teaching Assistant, Bio 85, Stanford University 2025, 2026