Evan Halloran

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EDUCATION

Indiana University Bloomington **December 2025**
Luddy School of Informatics, Computing, and Engineering **GPA: 3.856 / 4.0**
Bachelor of Science in Pure Mathematics and Computer Science *Hutton Honors Notation*
Specialization: Artificial Intelligence
Minor: Linguistics

RESEARCH AND WORK EXPERIENCE

West Virginia University Mathematics REU Internship **Summer 2025**

- Studied a Keyfitz-Kranzer type system of hyperbolic conservation laws with applications in ecology and physics
- Implemented the LLF flux-splitting scheme in Matlab to numerically analyze behavior of solutions in the phase-plane
- Presented at the university's summer research symposium; received acclaim from judges

Indiana University Mathematics REU Internship **Summer 2024**

- Researched bifurcation theory and phase transition dynamics to model binary systems and fluid separation
- Applied center manifold theory to reduce the Cahn-Hilliard equation over planar lattices to a system of ODEs
- Presented work to other students and mentors at a state-wide REU conference for mathematical sciences; work featured at JMM 2025

IU Mathematics Directed Reading Program **Fall 2022**

- Researched advanced topics in Fourier analysis with the help of a graduate student mentor
- Shared my findings with the other participants in the program at an end-of-semester conference

IU Mathematics Department **Fall 2022 - Fall 2023**

Finite Mathematics/College Algebra TA

- Proctored exams, hosted weekly tutoring sessions, and graded homework in a timely manner for the department

Bloomington Drosophila Stock Center **Spring 2021 - Present**

- Nurtured stocks of genetically-mutated fruit flies for a genomics lab and treated sick colonies with various medicines

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PAPERS

- Culver C, Ayres A, **Halloran E**, Lin R, Peng E, Tsikkou C, "An analysis of the Riemann problem for a 2x2 system of Keyfitz-Kranzer type balance laws with a time-dependent source term", *Physics of Fluids*.
- Culver C, Ayres A, **Halloran E**, Lin R, Peng E, Tsikkou C, "An analysis of the Riemann problem for a 2x2 system of Keyfitz-Kranzer type conservation laws using shadow waves and Dafermos regularization", under review.
- Grossman J, **Halloran E**, Wang S, "Cahn-Hilliard equations on lattices: dynamic transitions and pattern formations", *Communications in Mathematical Sciences.*

INVOLVEMENT

Alpha Phi Omega **Spring 2023 - Spring 2025**

- Chaired a national co-ed fraternity at Indiana University centered around leadership, fellowship, and service
- Established various volunteer networks with the local Adopt-A-Road program and Hoosier Hills food pantry

Indiana University Student Foundation **Fall 2022 - Spring 2025**

Membership Committee and Alumni Affairs Committee

- Authored the foundation's newsletter, tracked member attendance, and planned inter-foundation events
- Fostered connection with foundation alumni and curated public display cases of Little 500 memorabilia

AWARDS

Corey M. Manack Memorial Scholarship (*three time recipient)* **Spring 2023, Spring 2024, Spring 2025**
Mathematics Departmental Award for Academic Excellence **Spring 2022**

TECHNICAL SKILLS

Languages: Python, Java, C, Racket (Lisp), SQL, Matlab, HTML, CSS, JavaScript
Libraries/Frameworks: TensorFlow, PyTorch, Scikit-learn, Pandas
Operating Systems: Linux, ROS2

INTERESTS

historical linguistics, classical piano, entomology/insects, rock climbing, swimming