

Evan Halloran

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EDUCATION

Indiana University Bloomington

Bloomington, IN

Bachelors of Science in Mathematics and Computer Science | GPA: 3.86 / 4.0

Dec. 2025

- Luddy Highest Distinction | Hutton Honors College | Minor in Linguistics

EXPERIENCE

West Virginia University Department of Mathematics

Morgantown, WV

Student Researcher

Jun. 2025 – Jul. 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 and Fortran to numerically analyze behavior of solutions in the phase-plane
- Presented at the university's summer research symposium; received acclaim from judges

Indiana University Department of Mathematics

Bloomington, IN

Student Researcher

Jun. 2024 – Jul. 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 the Joint Mathematics Meeting 2025

Teaching Assistant for Finite Mathematics & College Algebra

Aug. 2022 – May 2025

- Proctored exams, hosted weekly tutoring sessions, and graded homework in a timely manner for the department
- Worked front desk at the Math Learning Center, assisting students with a variety of math related questions
- Held review sessions for groups of students before midterm exams and the final exam

Directed Reading Program

Aug. 2022 – Dec. 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

Bloomington Drosophila Stock Center

Bloomington, IN

Stock Caretaker

May 2021 – Present

- Nurtured stocks of genetically-mutated fruit flies for a genomics lab and treated sick colonies with various medicines
- Aided in the processing of shipments, ensuring scientists around the nation received healthy stocks of flies for research

PUBLICATIONS

- Culver J, Ayres A, **Halloran E**, Lin R, Peng E, Tsikkou C. (2025). 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*, 37(11). <https://doi.org/10.1063/5.0296696>
- Grossman J, **Halloran E**, Wang S. (2026). Cahn-Hilliard equations on lattices: dynamic transitions and pattern formations. *Communications in Mathematical Sciences*, 24(4), 985-1029. <https://dx.doi.org/10.4310/CMS.260326185101>
- Culver J, Ayres A, **Halloran E**, Lin R, Peng E, Tsikkou C. (2026). An analysis of the Riemann problem for a 2x2 system of Keyfitz-Kranzer type conservation laws using shadow waves and Dafermos regularization. *Physica D: Nonlinear Phenomena*. In publication.

AWARDS

Indiana University Department of Mathematics

Bloomington, IN

Corey M. Manack Memorial Scholarship

Spring 2023, Spring 2024, Spring 2025

Departmental Award for Academic Excellence

Spring 2022

CONFERENCES

Carnegie Mellon University

Pittsburgh, PA

Topics at the Interface of PDEs and Probability

Jun. 2026 (upcoming)

- Invited to attend a five day summer lecture series covering topics at the intersection of PDEs and probability theory

West Virginia University

Morgantown, WV

Summer Undergraduate Research Symposium

Jul. 2025

- Presented a poster with my research group based on the numerical investigations of solutions to the Riemann problem for a 2x2 system of balance laws

Indiana University

Indianapolis, IN

Indiana Undergraduate Math Research Conference

Jul. 2024

- Delivered a presentation on the patterns formed by steady-state solutions to the Cahn-Hilliard PDE on two-dimensional lattices

VOLUNTEERING

Alpha Phi Omega

Bloomington, IN

Adopt-a-Road Chair | Hoosier Hills Chair

Jan. 2023 – May 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
- Hosted weekly volunteer events including food drives at Hoosier Hills, trash cleanup on High Street, and Challah for Good at IU Hillel

Indiana University Student Foundation

Bloomington, IN

Membership Committee | Alumni Affairs Committee

Aug. 2022 – May 2025

- Authored the foundation's newsletter, tracked member attendance, and planned inter-committee mixers
- Hosted key events promoting alumni engagement, including the Little 500 alumni barbecue and Homecoming float
- Collaborated with the University Archives at Wells Library to parse through and log historical IUSF records
- Curated public display cases of Little 500 memorabilia at the Wilcox House

TECHNICAL SKILLS

Languages: Python, Java, C, Racket (Lisp), SQL, Matlab, HTML, CSS**Operating Systems and Frameworks:** UNIX, ROS2**INTERESTS**

linguistics (syntax/generative grammar), Romantic era piano, swimming, rock climbing, entomology