

Evan Halloran

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EDUCATION

Indiana University Bloomington

Luddy School of Informatics, Computing, and Engineering

Bachelor of Science in Pure Mathematics and Computer Science

Specialization: Artificial Intelligence

Minor: Linguistics

December 2025

GPA: 3.856 / 4.0

Hutton Honors Notation

RESEARCH 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
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WORK EXPERIENCE

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

Stock Caretaker

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

Mays Greenhouse

Spring 2020 - Fall 2021

Support Service

- Facilitated construction of greenhouses and garages and aided customers in purchasing plants and outdoor furniture

Indiana University Recreational Sports

Summer 2019

Lifeguard and Swim Instructor

- Safely monitored outdoor pool as lifeguard, instructed group swim lessons, and received CPR certification
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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*.

RELEVANT COURSEWORK

Data Structures and Algorithms, Artificial Intelligence, Data Analysis and Mining, Autonomous Robotics, Machine Learning
Linear Algebra, Real Analysis I & II, Abstract Algebra I & II, Partial Differential Equations I & II, Probability Theory
Phonetics, Phonology, Syntax, Field Methods in Sociolinguistics

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 2024

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

Operating Systems: UNIX, ROS2

INTERESTS

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