

Abe Leininger

github.com/abeleinin • twitter.com/abeleinin

Bloomington, IN 47408

EDUCATION

Indiana University – Bloomington, IN May 2024
Bachelor of Science in Computer Science, Minor in Statistics **GPA:** 3.75 / 4.00
Awards: Glushko Research Excellence Award, Murray Austin Goldstone Scholarship, CS Student Scholarship
Coursework: Robotics, Machine Learning, Cognitive Science, Algorithms, Data Structures

WORK EXPERIENCE

Genesys – Indianapolis, IN / Remote May 2024 – Present
Associate Software Engineer

- Improving the real-time call orchestration system on the Cloud Media Team using C++

Software Engineer, Intern May 2023 – May 2024

- Optimized log message parsing algorithm, achieving a ~20% reduction in processing time
- Developed a C++ application that converts telecommunication log messages into DOT or PlantUML diagrams, streamlining the visual analysis of call flows
- Designed a dynamic web interface using HTML, CSS, and JavaScript, featuring interactive diagram manipulation, drastically enhancing tool usability in determining errors in complex call scenarios

Indiana University – Bloomington, IN October 2023 – May 2024
Simulation Lead on IU Indy Autonomous Challenge Team

- Managing a team of six graduate and undergraduate students, unifying efforts in data analysis, testing component modules, and developing collision detection algorithms using ROS in an Unreal Engine Simulator
- Improved lap time by ~20%, placing 4th in a field of 18 universities worldwide in the first simulation time trial

Research Assistant January 2023 – May 2024

- Published a novel autonomous uneven terrain navigation algorithm, accepted into ICRA 2024, a top robotics conference in the field
- Converted theoretical research proposals into working algorithms in ROS using Python and C++, conducting testing in the Gazebo simulator for autonomous ground vehicles

GitHub Open-Source Contributor – Bloomington, IN December 2023 – May 2024
Apple's MLX Machine Learning Framework

- Enhanced core functionality in the MLX library by implementing linespace and meshgrid functions using C++ and Python
- Integrated Nesterov Momentum into the SGD optimizer to improve convergence efficiency

PROJECTS

Visual-Spatial Memory Game (JavaScript, React, Next) January 2024 – Present

- Conducted a 40-subject trial on a custom visual-spatial memory game built using the React framework as a part of an on-going research initiative with the IU Cognitive Science department
- Integrated Firebase authentication and real-time database, enabling secure storage of user-generated data

Terminal-Based Spaced Repetition Tool (Go) March 2024

- Created a CRUD CLI/TUI tool in Go for efficient flashcard practice using the Leitner system
- Integrated OpenAI's GPT-4 LLM to automatically generate flashcard decks from user prompts

PUBLICATION

- Gaussian Process-based Traversability Analysis for Terrain Mapless Navigation. Abe Leininger, Mahmoud Ali, Hassan Jardali, and Lantao Liu. IEEE International Conference on Robotics and Automation (ICRA 2024)

TECHNICAL SKILLS

Programming Languages: C / C++, Python, Go, JavaScript, R

Software: Linux, ROS, Git, Vim, Tmux