

Malachi Crain

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EDUCATION

The University of Alabama | Tuscaloosa, AL

B.S. in Computer Science and Mathematics | GPA: 4.0/4.0

May 2025

Relevant Coursework: Software Design, Data Structures & Algorithms, Operating Systems, Database Management, Programming Languages, High Performance Computing, Scientific Computing, Microcomputers, Linear Algebra, Discrete Mathematics, Differential Equations, Probability, Statistics I & II

Activities/Organizations: BamaCatholic, Fellowship of Catholic University Students, Ultimate Frisbee Club Team, Intelligent Systems and Structural Dynamics Lab, Hackathons, Cyber Security Lab

TECHNICAL SKILLS

Programming Languages: JavaScript, Python, Java (proficient); C++, C, HTML, CSS, SQL (Intermediate); Rust, Lua (beginner)

Frameworks & Tools: React, Redux, SpringBoot, Expo, PyTorch, Node.js, Express, MongoDB, Google Analytics, REST, Sass

Software Applications: Linux, Git, GitHub, Jenkins, Octopus, Azure DevOps, Excel, Microsoft Power Suite, Rally, Figma

PROFESSIONAL WORK EXPERIENCE

Research Assistant | Intelligent Systems and Structural Dynamics Laboratory | Tuscaloosa, AL

Aug 2024 – Present

- Created a dataset labeling program in Java, leading a team of undergraduates to annotate 12,000+ images accurately
- Developed and trained Machine Learning models for water segmentation using Python, PyTorch, and state-of-the-art encoders
- Generated synthetic flood image datasets with CycleGAN and diffusion models to enhance training data diversity

Software Engineering Intern | Unum Group | Columbia, SC

May – Aug 2024

- Contributed to an Agile Scrum team of 12 tasked with improving an external-facing web portal with 5000+ daily users
- Implemented new features using ReactJS and CSS, adding the ability to view uploaded documents and file insurance claims
- Fixed accessibility issues, software bugs, and styling inconsistencies, helping improve CSAT scores by 3%
- Refactored unit tests, increased test coverage, and removed deprecations, reducing technical debt and improving code quality

IT Intern | Depository Trust and Clearing Corporation | Tampa, FL

June – Aug 2023

- Developed AutoSys batch process with Java and SQL to ensure reports are generated daily, increasing customer satisfaction
- Migrated multiple Java applications to a password access manager, enhancing security and guaranteeing compliance
- Tested and deployed code changes to verify code quality with JUnit, Mockito, and Jenkins
- Automated business processes using Microsoft Power Apps and Power Automate, saving an estimated 200 hours

LEADERSHIP & PROJECTS

Vice President | BamaCatholic

Dec 2023 – Present

- Coordinated 20 volunteers each week to help run a religious service attended by at least 400 students weekly
- Recruited and trained 30+ new volunteers for 8 different positions, increasing volunteer numbers by over 50%
- Developed leadership skills by supervising and mentoring 5 subordinates who manage their own teams and events

Technical Lead | University of Alabama Natural Language Processing Research

Feb 2022 – Present

- Developed a program to analyze texts & test hypotheses about natural language processing using Word2Vec, BERT, & Alpa
- Used the university's High Performance Computing cluster to run the program at scale, collecting results on 27 large texts
- Sorted and compiled data, in order to co-write conference presentation: "Word Prediction Algorithms and the Analysis of Literary Texts," 35th Annual Science Literature and the Arts Conference, Purdue University, October 8, 2022

EXTRACURRICULAR ACTIVITIES & AWARDS

University of Alabama Outstanding Junior in Computer Science

Aug 2023 – May 2024

College of Arts and Sciences Outstanding Sophomore

Aug 2022 – May 2023

Hackathons

Apr 2022 – Present

- 2024 UA Innovate Hackathon: 1st place in Full Stack Development category (lead frontend developer)
- 2024 Big Ideas Social Innovation Contest: Grand Prize Winner (team lead)

University of Alabama President's List

Dec 2021 – Present

National Merit Finalist

Jan 2021