

Jay Kumar Roy

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Education

University of Alabama

Honors Bachelor of Science in Computer Science, Minor in Robotics | GPA: 4.0

Expected: May 2026

Tuscaloosa, AL

Experience

Software Engineer Intern

Alabama Productivity Center

May 2025 – Present

Tuscaloosa, AL

- Developed .NET Core backend using C# Razor syntax resulting in 80% increase in web traffic
- Implemented MS SQL Server database with structured tables and views to support CRUD and filtering operations
- Revamped frontend dashboard used by 150+ companies, saving estimated \$15K+ annually in reporting costs

Software Engineer Intern

Soaper

March 2025 – May 2025

Dover, DE

- Automated meeting scheduling platform using Azure Functions and PostgreSQL, streamlining booking workflows
- Architected an AI outbound agent integrated with custom APIs, reducing manual outreach operations by 60% and enhancing engagement efficiency

Research Software Engineer

mu-Net Lab

March 2024 – Feb 2025

Tuscaloosa, AL

- Designed and implemented object-oriented simulation software for underwater autonomous robots, utilizing Particle Swarm Optimization (PSO) algorithms to improve adaptability in dynamic environments
- Co-authored research presented at IEEE SouthEastCon on communication protocols and adaptive navigation

Projects

Fullstack Developer - Colleges.fyi | *Python, React, MongoDB, TypeScript, FastAPI, Redis*

- Developed a full-stack web app using React, FastAPI, and MongoDB to provide profiles of college-admitted students to guide high school students in their application process, reaching 600+ users in the first week
- Engineered custom webhooks, reducing latency by 20% and enhancing real-time processing through RESTful APIs for seamless data management

HIPAA-Compliant Health Platform | *Python, FastAPI, TypeScript, Auth0, Pinata*

- **Won Best AI** out of 39 teams at UGAHack for AI-driven health monitoring platform with secure data storage
- Engineered a distributed, immutable database with relational models that supports data updates on Pinata IPFS
- Built a custom Python SDK with FastAPI to power an internal query engine for CRUD operations on the database

Semantic Query Engine | *Python, FAISS, RAG*

- Built an advanced Retrieval-Augmented Generation system enabling semantic search across 100K+ lines of text
- Implemented query expansion and metadata-based filtering to improve retrieval precision and contextual relevance

Skills

Languages: Python, Java, JavaScript, TypeScript, C, C++, HTML, CSS, SQL, Go, C#

Frameworks/Libraries: Next.js, React, Django, MongoDB, FastAPI, .NET

Tools: Docker, GCP, Azure, AWS, Git, MongoDB, Firebase, GraphQL, PostgreSQL, NoSQL, CrewAI, LangChain

Concepts: OOP, Object-oriented, SpringBoot, JSP