

# Prasant Koirala

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## EDUCATION

### The University of Southern Mississippi

Bachelor of Science in Computer Science, GPA: 4.0

Hattiesburg, MS

Aug. 2024 – May 2028

Relevant Coursework: Data Structures and Algorithms, Object Oriented Programming, Computer Systems

## TECHNICAL SKILLS

**Languages:** C++, C, TypeScript, Python, SQL, C#, Bash

**Frameworks & Libraries:** React, Node.js, Express.js, Django, FastAPI, TailwindCSS, PostgreSQL, MySQL

**Tools & DevOps:** Git, Github, REST APIs, Postman, Docker, Azure, AWS, Jenkins

## EXPERIENCE

### Research Assistant

*The University Of Southern Mississippi*

Sept. 2025 – Present

Hattiesburg, MS

- Trained a ModernBERT model with **CUDA**-accelerated pipelines to generate semantic embeddings for detecting social engineering patterns in corporate communication.
- Constructed a **GNN**-based relational graph capturing connections across **500,000+** emails and identified anomalies by analyzing graph statistics and deviation patterns.
- Built an affinity matrix to contextualize **ModernBERT** embeddings and applied a classifier model to predict the probability of social engineering attempts.

### Web/App Development Intern

*Optimal Answers, LLC*

Jun. 2025 – Aug. 2025

Gulfport, Mississippi

- Contributed to internal **C#** software by debugging and optimizing database navigation logic, enhancing UI responsiveness, and workflow efficiency for staff.
- Collaborated cross-functionally with the design and data teams to implement usability improvements and feature enhancements across the company's web and software platforms.
- Set up and deployed a full staging environment for the company's custom website, enabling safe **testing** and streamlined updates using WordPress.
- Performed a comprehensive site backup and executed a targeted **bug-fix** rollout that improved site stability, reduced navigation issues, and boosted customer retention.

## PROJECTS

### Chell – A Custom Shell in C | *C, Unix/Windows*

Mar. 2025

- Designed and implemented a lightweight Unix-like shell in C with cross-platform support for Windows and Unix-based systems, featuring custom command execution, built-in commands, command history, and pipeline support.
- Engineered a custom command parsing and execution system that efficiently handles user input, demonstrating expertise in low-level system calls and process management.

### Personal Status | *C++, Windows API, REST*

Jun. 2025

- Built real-time desktop monitoring system using C++ and Windows API that tracks development activity and pushes status updates to the portfolio website via secure REST API
- Developed cross-platform web integration with threaded architecture, local HTTP server, and Vercel API endpoint featuring API key authentication and JSON data exchange

### SenseNav | *Ardruino/Computer Vision*

Sept. 2025

- Built SenseNav at Hack MIT, an assistive navigation prototype for visually impaired users, integrating Arduino, ultrasound proximity sensors, DC motor-based haptic feedback with backflow EMF protection, and a perception pipeline that pivoted from LiDAR to monocular depth estimation (MiDaS) for camera-based imaging.
- Combined AI-generated adaptive audio (Suno) with spatialized soundscapes to deliver multimodal obstacle detection; developed a functional prototype demonstrating sensor fusion, embedded systems, and AI-driven audio processing, ranking among the top 12 teams out of 320 projects.