Sudarshan Tiwari

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Education

Missouri State University **Springfield, Missouri**

Bachelor of Science in Computer Science *Jan. 2023 – Dec 2026(expected)*

Experience

Software Developer Intern **August 2025 – Present**

Tuningsql *Springfield, Missouri*

- Architected a full-stack web content transformation platform using PostgreSQL, PHP, JavaScript, and Backbone.js, designing relational database schema and implementing backend/frontend integration
- Developed PHP backend endpoints for HTML DOM transformation using DOMDocument and XPath, integrating external tools and implementing complete URL-to-transformation pipeline with comprehensive error handling
- Built Backbone.js frontend with real-time form validation, modal workflows, and asynchronous AJAX operations, enabling users to create and apply customizable content lenses with instant visual feedback

Research Assistant **May 2024 – Present**

Missouri State University *Springfield, Missouri*

- Implemented kernel-level memory management subsystem for hybrid memory systems using C/C++, incorporating LRU list scanning, page promotion/demotion logic, and inter-node page migration with kprobes-based function hooking
- Engineered multi-threaded daemon architecture managing per-node memory reclamation with real-time performance monitoring, achieving fine-grained page access tracking across DRAM and persistent memory nodes
- Designed and executed comprehensive benchmarking experiments evaluating memory allocation strategies and page reference patterns, analyzing kernel performance metrics and optimizing system behavior for hybrid memory workloads

Projects

Social Media App | *C#, .NET Core, Angular, SQL, OAuth, SignalR, Docker, Heroku* **June 2024**

- Developed a full-stack social media platform for open-source communities, enabling real-time conversations and media sharing with a responsive Angular frontend
- Integrated Cloudinary API for efficient image storage and management, reducing media upload latency by 30% through optimized content delivery
- Built a real-time chat system using SignalR WebSocket protocol, handling socket-based communication for seamless messaging with 99.9% uptime
- Implemented OAuth 2.0 authentication and authorization, securing user data and API endpoints with industry-standard security practices

Placement Tracker Dashboard | *React.js, Node.js, Express, MySQL, Chart.js* **October 2023**

- Built a full-stack dashboard application for myself so that I can track job applications, interview rounds, and feedback, enabling analytical insights into recruitment progress
- Designed responsive React UI with visualizations for application statuses, interview stages, and offer analytics using Chart.js
- Engineered secure authentication and personalized dashboards using JWT tokens and hashed credentials
- Developed RESTful APIs and optimized SQL queries for real-time updates, robust filtering, and historical data analysis

Command Shell | *C++, GNU/GCC, Unix System Calls* **September 2024**

- Developed a custom Unix-like shell with command parsing, process management, job control, and I/O redirection capabilities
- Implemented pipe handling for command chaining (e.g., ls — grep txt), enabling users to execute multiple commands in sequence with accurate data flow
- Enhanced usability with features including searchable command history, dynamic prompts, environment variable management, and background process execution
- Utilized system calls (fork, exec, wait, pipe, dup2) to manage process creation, inter-process communication, and signal handling

Technical Skills

Programming Languages: Python, C++, C#, JavaScript, PHP, SQL, Bash, Java
Web Technologies: React.js, Angular, Node.js, Express.js, Django, Backbone.js, Tailwind CSS, RESTful APIs, WebSocket, AJAX
Databases & Cloud: MongoDB, SQL Server, PostgreSQL, Microsoft Azure, Heroku, Docker
Tools & Frameworks: Git, VS Code, Postman, IntelliJ IDEA, PyCharm, SignalR, OAuth 2.0, JWT, DOMDocument, XPath, Linux Kernel, Kprobes
Libraries: NumPy, Pandas, Redux, Bcrypt, Cloudinary API, Backbone.js