

Sai Tanuj Karavadi

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EDUCATION

Bachelor of Science in Computer Science & Data Science

December 2026

University of Wisconsin, Madison – 3.6

• Relevant Coursework: Computer Architecture & Machine Organization, Database Design, Algorithms, Artificial Intelligence

EXPERIENCE

Software Engineer

Spark ERP Consulting – Minneapolis, MN

June 2024 – Present

- Collaborated in an Agile framework to develop and self-host the company website (HTML, CSS, React) on a home-built server, routing the domain through Cloudflare to a local Node instance, and implementing optimization and SEO techniques that reduced load time by 30% and increased customer inquiries by 25%.
- Currently supporting Coupa BYOA client implementations by configuring and deploying client-specific application environments, while also managing and monitoring middleware integrations through Boomi, overseeing task workflows, data mappings, and process automation to ensure seamless system connectivity across client platforms.

Channel Firmware Engineer

Western Digital – Rochester, MN

June 2025 – December 2025

- Engineered C++ firmware implementing special command code for Read/Write Channel operations, contributing 15,000+ lines of production code ensuring SATA and SAS protocol compatibility across HDD systems. Developed and maintained automated testing scripts and validation frameworks to integrate command functionality into Western Digital's Common Code Base while upholding strict codebase standards and guidelines.
- Collaborated closely with the team to evaluate hard drive Tub Testing data and developed TCL testing scripts for automated testing, data analysis, and the generation of detailed statistical reports and visualizations on register-level performance, while deepening knowledge of HDD components (Channel, SOC, etc.) Utilized oscilloscope for signal diagnostics & protocol verification against specification requirements.
- Led the development of an internal Model Context Protocol (MCP) using LLMs and Qdrant to vectorize PDF specifications and registers, reducing processing time by 37% and streamlining lookup efficiency for Channel engineers during firmware validation and debugging.

Coding Teacher Intern

Tech Academy MN – Little Canada, MN

March 2023 – May 2025

- Taught Python, Java, Scratch, and video editing to classes of up to 35 in-person and virtual students, designing creative coding projects and providing individualized support to enhance understanding of complex programming concepts and improve problem-solving skills across diverse age groups and learning levels.

PROJECTS

CyanBase – A Dynamic TV Show, Movie, and Anime Logging Platform

<https://cyancheetah-github-io-7alg.vercel.app/>

November 2024 – Present

- Engineered CyanBase, a unified TV, movie, and anime logging platform, integrating TMDB + Jikan REST APIs with a React + Vite frontend and Supabase SQL backend. Refined customizable profiles, trending carousels, and discovery features to streamline user content tracking.
- Achieved 30% faster API response times through PurgeCSS optimization, enhanced user engagement via responsive design and advanced filtering, with robust error logging and caching strategies.

Retrieval-Augmented Generation (RAG) Chatbot – Enhanced Document Retrieval and NLP

<https://github.com/CyanCheetah/ragcyanbot>

December 2024 – May 2025

- Built a responsive web interface with optimized API performance, robust logging, and caching strategies. Incorporated AWS Lambda for serverless scalability while collaborating remotely using Agile methods.
- Co-Created a chatbot combining document retrieval with NLP using Meta's PyLLama and OpenSearch, trained on internal business documents, and implemented document uploads, graph visualizations, and real-time chat features to enhance user engagement.

SKILLS

Languages & Frameworks: Python, JavaScript, TypeScript, C, C++, Java, SQL, React, Node.js, Vite, Flask, REST APIs, HTML/CSS, Git, Docker, Linux, ROS, MATLAB/Simulink, Arduino, TCL, R

ERP, Tools, LLM: PostgreSQL, AWS Lambda, CI/CD, Jenkins, JIRA, Bitbucket, Gerrit, Supabase, Cloudflare, Coupa, Boomi, SAP, PyTorch, PyLlama, Pandas, NumPy, Qdrant, LLMs, NLP, Model Context Protocol (MCP), OpenAI CLIP, Qwen

EXTRACURRICULARS

Controls Sub-Team

Wisconsin Autonomous – Madison, WI

September 2024 – May 2025

- Developed and implemented path planning algorithms for autonomous vehicles using ROS, C++, and Python as part of the SAE AutoDrive Challenge II competition, integrating sensor fusion data and real-time obstacle avoidance for dynamic navigation scenarios.
- Utilized MATLAB's Model Predictive Control Toolbox and Simulink for advanced controller design and optimization, tuning parameters for lateral and longitudinal vehicle control to improve trajectory tracking accuracy and system responsiveness.

PUBLICATIONS

A Review of Analytics Models and Applications in Sustainable Manufacturing · Co-Author

August 4, 2023