Pranav Dronavalli

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Education

University of Wisconsin - Madison — Madison, WI
B.S in Computer Science, Mathematics 3.95/4.0 GPA — *Sep. 2021 – May 2025*

Experience

Software Engineer Intern — May. 2023 – Aug. 2023
Entegral — *Madison, WI*

- Improved ML model precision by 6% by creating a shallow neural network model with PyTorch for the model aggregation
- Migrated ML infrastructure to the cloud, and created scheduled SQL queries to retrieve model data from MySQL
- Created ETL pipelines using airflow to move data from MySQL, transforming it in BigQuery, and adding data as dimensions to LookML model
- Developed API's in NestJS to integrate Google Looker Studio dashboards into the Angular app

Undergraduate Researcher — Dec. 2023 – Present
Wisconsin Institute for Discovery — *Madison, WI*

- Conduct research under under professor Robert Hawkins focused on bridging the gap between GenAI and human cognition
- Experiment with new generative agent memory architecture to help agents escape their LLM limitations
- Developed experiment's application and data pipelines for result analytics as well as integrating error montioring

Undergraduate Projects Lab Coordinator — Dec. 2022 – Present
University of Wisconsin-Madison — *Madison, WI*

- Supervised the lab, allowed students to use our hardware, and helped members with classwork
- Maintained our server infrastructure including a kubernetes cluster and expanded our infrastructure capabilities
- Organized computer science related events for students including: tech talks, workshops, and most notably hackathons with over 300 participants

Projects

PranavBot AI Chatbot | *Node.js, AWS Lambda, API Gateway, ECR, CloudFront* — Sep. 2023

- Built a serverless chat bot application for my website using AWS Lambda, ECR (Docker), and a fine-tuned LangChain model to answer questions about me on my portfolio website
- Integrated chatbot into Astro/Tailwind frontend using API Gateway
- Implemented CI/CD pipeline using Github Actions to automate AWS deployment on each successful build

Rust Obfuscator | *Rust* — Jan. 2024

- Created a procedural macro crate (cryptify) for run-time string literal encryption and flow obfuscation, giving users fine-grained obfuscation control
- Developed a cli tool to automatically insert macros from the library at random points into the source
- Includes optional features to obfuscate the source code directly with variable renaming and control flow obstruction

IncentiVise | *Node.js, Go, PostgreSQL, React* — Sep. 2023 - Present

- In process of developing SaaS-based startup MVP, integrating a diverse tech stack encompassing Node.js, Go, PostgreSQL, and React
- Built backend on Postgres with a separate concurrent Go service capable of handling many simultaneous requests
- Incorporated Integration testing with Jest testing all endpoints of Node API

GameBoy Emulator | *C, CMake* — June. 2023 - Present

- Implemented the entire GameBoy CPU instruction set in a reusable and modular way
- Created a Memory Management Unit that models the CPU's address space and handles all memory read/writes, program flags, and permissions
- Built a comprehensive CUnit testing suite as well as creating CI workflows in Git to automate testing and used CMake to automate the build process

Technical Skills

Languages: Java, Python, Go, C/C++, JavaScript, TypeScript, SQL, HTML/CSS, R
Frameworks/Libraries: React, Angular, Astro, Node.js, NestJS, Express
Infrastructure/Dev Tools: AWS, Docker, PostgreSQL, Cassandra, Spark, Kafka, GCP, Git, GitHub Actions, VSCode