

Aadil Mallick

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PROFESSIONAL SUMMARY

Software Engineer and recent graduate from William & Mary with a B.S. in Computer Science and Applied Mathematics. Developed generative AI and Retrieval-Augmented Generation (RAG) applications in Python using Ollama, Langchain, FastAPI, and Pydantic. Designed testable backend APIs and modular services, then containerized and deployed them using Docker, Kubernetes, AWS and CI/CD. Deployed several production-grade full-stack applications to Vercel using Next.js, TypeScript, TailwindCSS, and ShadCN. Worked in production software across research, defense, and federal-contracting domains. Proficient in Claude Code, Cursor, Codex, agent skills, and agentic loops.

EDUCATION

- College of William & Mary** Williamsburg, VA
Bachelor of Science in Computer Science, Applied Mathematics; GPA: 3.70/4.0 August 2022 - May 2026
- **Relevant Coursework:** Neural Networks, Differential Equations, Quantum Computing, Intro Cybersecurity, Mobile Application Security, Probability and Statistics, Abstract Algebra, Data Science.
- Thomas Jefferson High School for Science and Technology** Alexandria, VA
High School Diploma; GPA: 4.1/4.0 August 2018 - June 2022
- **Relevant Coursework:** AP Computer Science A+, Artificial Intelligence, Web Development.

EXPERIENCE

- Software Engineer** June 2026 – Present
Unison McLean, VA
- Architected AWS infrastructure for an AI-powered federal contracting product called BidScale using AWS CDK, TypeScript, and GraphQL.
 - Managed automatic provisioning of AWS CDK L2 constructs to dedicated VPCs and public and private subnets within availability zones to harden network security.
 - Improved the developer experience in the company repository by adding devcontainers, Docker Compose local development configuration, TMUX configuration, and AWS CDK unit tests to test CloudFormation provisioning.
- CS Research Lab Assistant Intern** September – December 2025
W&M AI Lab Williamsburg, VA
- Designed Langchain RAG experiments to evaluate model accuracy of structured outputs on clinical medical trial datasets, then extracted classification metrics including Jaccard similarity, F1 score, and cosine similarity.
 - Coauthored and published a [paper](#) in the *Journal of Software: Evolution and Process* publication and ran structured output inference experiments in Python on Ollama and HuggingFace models at scale to predict CVSS vulnerability scores of code snippets, attaining 83% accuracy.
- Full-Stack Developer Intern** June – August 2025
Howard Hughes Medical Institute (HHMI) Chevy Chase, MD
- Designed a Kubernetes-based distributed, generic services architecture system that monitored 112+ company internal websites for KPIs and Jenkins build pipelines statuses.
 - Built a full-stack, real-time dashboard to visualize internal site KPIs and monitor Kubernetes cluster health using MongoDB, Express, TypeScript, Node, React, cron jobs and microservices communication via REST APIs.
 - Architected a robust test-driven development framework by using Vitest for unit tests and Playwright for end-to-end tests, and then integrating CI/CD via Github Actions and automated EKS deployment.
- Frontend Developer Intern** June – August 2024
Two Six Technologies Arlington, VA
- Resolved 11 high-priority production bugs in an Agile-based team through systematic debugging, code reviews, and implementation of automated testing with Jest, improving system reliability by 25%.

PROJECTS

- VibeResume - AI Portfolio Generator** | *Next.js, Gemini API, PostgreSQL, Clerk* | [Demo](#) 2025
- Won W&M hackathon (Best Use of Gemini API) with an AI-powered SaaS that generates portfolio websites from resumes using Next.js, Gemini API, Vercel hosting, Clerk authentication, and PostgreSQL with Neon.
 - Tracked real payments with Clerk billing and implemented robust, provider-agnostic LLM inference with Vercel AI SDK, long polling for realtime updates, and Inngest for background jobs.
- BetterCare Meals** | *React, TypeScript, Supabase, Stripe* | [Website](#) 2025
- Performed freelance work for a client by architecting a serverless E-commerce website selling healthcare-based meals that processes real payments; built with Supabase cloud functions, Google OAuth, Stripe, and hosted on Vercel.
 - Hardened security for the application by applying CORS and rate limiting for the serverless functions and applying row level security policies to the PostgreSQL database.
- Link Shortener (TinyURL clone)** | *Deno, TypeScript, React, Deno KV* | [Github](#) | [Demo](#) 2025
- Built full-stack URL shortener with Deno runtime, server-side React, and NoSQL Deno KV database, featuring native OAuth authentication, analytics dashboard, and sub-100ms redirect latency serving 200+ daily requests.
- Loolite** | *Web Components + TypeScript Chrome Extension* | [Github](#) | [Demo](#) 2024
- Built Chrome extension mimicking Loom functionality using Document Picture-in-Picture API to overlay camera feed during screen recordings, enabling professional video presentations.
- Youtube Bookmarker** | *React, TypeScript, GitHub API* | [Github](#) | [Demo](#) 2023
- Garnered **1000+** users and a 4.7/5 rating with this React + TypeScript chrome extension, with features like cloud sync with Github gists and bookmark exports for notes on any YouTube video.

PUBLICATIONS

- On Predicting Vulnerability Severity Using In-Context Learning: An Industrial Case Study**
J. Software: Evolution and Process | [Article](#) 2026
- Co-authored a peer-reviewed paper on using large language models to predict CVSS vulnerability severity scores of code snippets, using in-context learning with local open-source LLMs.
 - Designed and ran the structured-output experiments, orchestrating batch concurrent Ollama and GPT-4o-mini API calls over the Big-Vul dataset using async I/O and multithreading in Python.
 - Enforced schema-constrained 0–10 score outputs using Pydantic with hard failure on non-conformance, then aggregated regression and stratified classification metrics, then ran the pandas-based analysis pipeline.
- Claude Skills Are THE Cheat Code of AI — Learn Them Now.** | *Stackademic* | [Link](#) 2026
- Wrote a deep-dive guide into how Claude/Agent skills work, tradeoffs between MCP and agent skills, custom skill creation, and how to integrate them with Claude Cowork, Claude Desktop, and Claude Code.
- Learn to Build a Neural Network From Scratch** | *Stackademic* | [Link](#) 2024
- Authored a 20,000-word technical article published in *Stackademic* on Medium explaining neural network mathematics from first principles, including linear algebra, gradients, optimizers, backpropagation algorithms and NumPy implementations, garnering 872+ claps and 60,000+ views.

TECHNICAL SKILLS

Languages: Python | JavaScript | TypeScript | Java | HTML | CSS
AI/ML Frameworks: PyTorch | TensorFlow | Langchain | NumPy | Pandas | Scikit-learn | Google-ADK
Web Frameworks: Next.js | React | Astro | FastAPI | Node.js | Express
Databases: PostgreSQL | MongoDB | Redis | Firebase | Supabase | Turso | SQLite
Technologies: Docker | Kubernetes | Github Actions | Git | Linux | npm | REST | microservices | CI/CD | Selenium