

# Aditya Kamat

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## SUMMARY

Software Engineer with hands-on experience building scalable systems, APIs, and full-stack web apps. Skilled in backend architecture, distributed systems, and deploying real-world AI-powered products.

## EDUCATION

### Masters of Science in Data Science

State University of New York at Stony Brook • December 2025 • 3.82

• New York

## EXPERIENCE

### Simulation Systems Developer (Research Assistant)

Jan 2025 – May 2025

*Stony Brook University — Interacting Robotic Systems Lab*

- Developed a modular simulation framework in **Unreal Engine** using **C++** and **Blueprints** to replicate assistive robot tasks like **object manipulation, grasping, and human interaction**.
- Engineered real-time **fluid simulation** using **SPH** and integrated **neural-network-generated SDF meshes** for dynamic collision handling, reducing simulation errors by **45%**.
- Exposed simulation functionality through **custom APIs** and reusable components, enabling plug-and-play **AI behavior integration** and speeding up prototyping by **30%**.

### Software Engineer Intern

April 2023 – April 2024

*Rivach, India*

- Built scalable **RESTful APIs** with **FastAPI** and **PostgreSQL** for LLM-backed services, handling **50k+ monthly requests** with sub-second latency.
- Refactored monoliths into modular microservices using **Docker, Git**, and layered architecture, reducing deployment complexity and improving maintainability.
- Integrated **ReactJS** frontend with backend APIs using **JWT** and **Axios**; implemented **CI/CD pipelines** via **GitHub Actions** and **100+ tests** with **pytest**, increasing deployment reliability.
- Tuned backend performance using **async I/O**, optimized **SQL queries**, and enhanced observability with **Prometheus** and **Power BI**, cutting processing time by **30%**.

## PROJECTS

### ScanAI: AI-Powered Food Safety & Ingredient Risk Detector

May 2025 – June 2025

- Built a full-stack web application using **React** and **Express.js** that analyzes uploaded food label images and returns a personalized **ingredient safety score** based on user profiles (allergies, age, health conditions).
- Trained a **100M parameter transformer model** for ingredient classification using domain-specific data; integrated model into backend pipeline using **FastAPI** and **OpenAI Vision API** for fallback cases.
- Designed and deployed the system on **AWS EC2** using **Docker, Nginx**, and **CI/CD pipelines**, achieving **99.5% uptime** and optimized inference latency under 500ms.
- Implemented real-time safety feedback UI using **Tailwind**, **custom visual components**, and **modular cards** for high user engagement and personalized reports.

### Go-RAFT: A Fault-Tolerant Distributed Key-Value Store using RAFT

April 2025 – May 2025

- Designed and implemented a fault-tolerant **distributed key-value store** in **Go** using the **Raft consensus algorithm**, ensuring **strong consistency** and **leader election** in failure scenarios.
- Enabled efficient inter-node communication via **gRPC** and **Protocol Buffers**, minimizing serialization overhead and simplifying service contracts.
- Simulated node failures and network partitions to test recovery mechanisms; achieved consistent **log replication** and recovery within **500ms** under normal failure rates.
- Benchmarked system using **wrk** and custom test harnesses; observed **2.8x higher throughput** than single-node baseline under high concurrency.

## SKILLS

**Programming Languages:** Python, JavaScript, C++, Java, C, SQL, Bash, HTML/CSS, R

**Software Engineering & DevOps:** Git, Docker, Linux, CI/CD (GitHub Actions), Nginx, REST APIs, WebSockets, JWT, Redis, Kubernetes (Minikube), gRPC, Protocol Buffers, AWS (EC2, S3), Google Cloud (GCS), Version Control, Load Testing (wrk)

**Frameworks & Libraries:** ReactJS, Express.js, FastAPI, Node.js, Firebase, MongoDB, PostgreSQL, MySQL, TailwindCSS, Chart.js, PyTorch, TensorFlow, HuggingFace Transformers, ONNX Runtime, Triton, MLflow, W&B

**AI & ML:** Transformers, LLMs, FlashAttention, Quantization, Sequence Modeling, Retrieval-Augmented Generation (RAG), Tokenization Pipelines, Model Checkpointing, Mixed Precision Training

**Data Tools & Visualization:** Power BI, Matplotlib, Seaborn, Excel, RStudio, Dask, PySpark, Qdrant

## ACHIEVEMENTS & INVOLVEMENT

**Certifications:** AWS Academy Cloud Foundations, NPTEL - Big Data Computing, ORACLE - Database Programming With SQL

**Hackathons:** Placed **2nd** among **100+ participants** at both the **Epitome (24h)** and **Zignasa-2k23 (36h)** hackathons for building real-time, impactful tech solutions. Contributed to social-good innovations at the **VIVITSU (48h)** Hackathon.