DAVAYAN SANYAL

Software Engineer | Python, Go, TypeScript, AWS | Data Pipelines and AI Applications

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SUMMARY

Backend Software Engineer with expertise in Golang, AWS, and distributed systems, with a secondary focus on AI/ML tooling and multi-agent systems. Experienced delivering production-hardened services across the full stack — infrastructure, observability, performance, and security.

EXPERIENCE

Capital One

McLean, VA

Software Engineer, Level 2 | **Bank Tech** Sep 2026 – Present

- Resolved **23 findings** raised by an AI-driven security scan on a production banking API within two months of joining, fixing them in code with JWT proof-of-possession tokens and atomic database operations, or disputing false positives and prompt engineering the scanner.
- Introduced OpenFeature across Java SOAP External Account Linking APIs, making feature flag code provider-agnostic, and migrated a production API from Optimizely to an internal Capital One flag platform, making it the first Bank organization API.

Software Engineer, Level 2 | **Card Tech** Jul 2026 – Sep 2026

- Pivoted from agent-based tooling to OpenSpec spec-driven development, solo-architecting the SDD framework and an /**openspec-onboard** tool that scaled adoption from **5 teams to the broader engineering org**.
- Replaced engineers' hand-built monitoring dashboard configs with a code-first observability platform (OpenTofu module) automated with Claude tools, so any service can deploy a fully compliant dashboard in minutes, eliminating dashboard drift across **40+ services**.
- Root-caused a production failure where ECS tasks failed to detect rotated secrets, then proved and shipped a self-healing background-refresh fix via k6 A/B testing, cutting tail latency **56%** and boosting throughput **22% with zero failures** at production scale.

Software Engineer, Level 1 | **Card Tech** Aug 2025 – Jul 2026

- Owned end-to-end development of Golang REST APIs for Capital One's SOAP-to-REST account modernization, migrating legacy mainframe write services from Java to Go and independently delivering **3 production APIs across 3 distinct clients**.
- Migrated core account services API from AWS Lambda to Fargate using CDK with distroless Docker containers, achieving **5–10× better P95 latency** over the serverless baseline and securing executive approval to adopt Fargate as the team's primary architecture.
- Created a shared Claude AI tooling repository with a symlink-based integration system, scaling it from my team to **5 modernization teams** and driving a multi-agent workflow that cut API modernization effort from **2 weeks to half a day**.
- Built a RAG chatbot with LangChain history-aware retrieval analyzing **500+ API attributes** for cross-repository lineage analysis, with a Gradio UI, a LangGraph state machine, and a pipeline for vector database creation, embeddings, and prompt engineering.
- Diagnosed a critical memory leak via pprof heap profiling, tracing root cause to unbounded attribute accumulation in a global logger; cut request latency **98% (333ms to 5.78ms)** and eliminated OOM crashes at **10,000+ concurrent requests**.

Software Engineering Intern | **Card Tech, New York City** Jun 2024 – Aug 2024

- Built AWS Lambda feedback loop API for a merchant classification ML model processing **30B transactions/year**, cutting misclassification rate **45%** across 200+ monthly reports.

University of Maryland

College Park, MD

Research Assistant | **Department of Finance** Dec 2023 – Nov 2025

- Built automated OCR pipeline digitizing **4,000+ noisy historical financial articles** using Tesseract, docTR, and EasyOCR, and a data pipeline evaluating Llama open source models at 15B–70B parameters with performance metrics for data cleansing accuracy.
- Optimized Professor Pete Kyle's financial market order book simulation by migrating NumPy/Pandas data structures to PyTorch, improving computational throughput for **high-frequency trading research**.

EDUCATION

B.S. Computer Science & B.S. Mathematics Aug 2021 – May 2025

University of Maryland, College Park GPA: 3.82/4.00

KEY ACHIEVEMENTS

- **VP Award**
  OpenSpec adoption across the broader engineering org
- **PM Award**
  Pace of delivery on Golang REST APIs
- **Hackathon Win**
  Best Use of MongoDB, Bitcamp UMD Hackathon

SKILLS

Languages
Python, Go, TypeScript, JavaScript, Java, C/C++

Data & Storage
PostgreSQL, DynamoDB, Snowflake, MongoDB, Supabase, Pandas, NumPy

Cloud & Infrastructure
AWS (CDK, Lambda, Fargate/ECS, IAM, Route53), Docker, IaC, CI/CD, REST APIs, Microservices, OAuth2

AI/ML
Palantir AIP, LangChain, LangGraph, RAG, multi-agent systems, LLM evaluation, embeddings, vector databases, prompt engineering, Claude Code, PyTorch, TensorFlow, Computer Vision

Front End
React, Angular, Next.js, Node.js

CERTIFICATES

AWS Solutions Architect Associate
IBM Advanced Deep Learning Specialist

PERSONAL PROJECTS

ReciMed: AI Recipe Generator
Palantir AIP Platform, Jul 2025

Dual-agent app with a React/TypeScript frontend: computer vision identifies ingredients from photos, and RAG over 1,000+ cookbook chunks and 500+ healthcare papers generates medication-safe recipes across 200+ medications, with <2s API orchestration across 3+ Foundry/AIP services.