

Navinashok Swaminathan

navinashok.swaminathan.us@gmail.com • +1-929-920-4789 • New York, NY
linkedin.com/in/navinashok-swaminathan • github.com/NavinColumbia

ACADEMIC DISTINCTIONS & AWARDS

- **Ivy League — Columbia University:** M.S. in Computer Science (**GPA 3.87/4.0**), focus on systems and AI/ML.
- **IIT-JEE Advanced (2019):** Top 1% nationwide with admits from **IIT Madras** and **IIT Roorkee**.
- **College of Engineering, Guindy:** B.Tech. IT (First Class with Distinction). *Asia's oldest engineering institute.*
- **SOF International Mathematics Olympiad (2017):** **Rank 5** in the International Zone, *Medal of Excellence.*
- **FIITJEE Talent Reward Exam (FTRE):** **75%** merit scholarship for Grades 11–12.

PROFESSIONAL SUMMARY

Pragmatic engineer who turns ambiguity into production software. Takes ideas from sketch to rollout — design, implementation, testing, observability, and staged release — then iterates on real signals. Balances reliability, latency, and cost while keeping momentum. Writes code that is readable, instrumented, and easy to operate. Works comfortably across the stack (product features, platform, and data/ML-adjacent tooling) and is known for calm execution, clear thinking, and leaving systems better than found.

TECHNICAL SKILLS

- **Languages:** Java, Python, C++, SQL, JavaScript/TypeScript, Go, Shell
- **Backend & Systems:** Spring Boot, REST, gRPC, Microservices, Event-driven design, Multithreading/Concurrency, System Design, GraphQL
- **AI/ML:** PyTorch/TensorFlow, scikit-learn, Transformers, LangChain, NLP/RAG, MLflow
- **Data & Messaging:** Snowflake, PostgreSQL, MySQL, Oracle, Redis, Teradata, Kafka, Spark, Pentaho
- **Cloud & DevOps:** AWS (Lambda, Step Functions, S3, DynamoDB, CloudWatch), GCP, Docker, Kubernetes, Terraform, GitLab CI/CD, GitHub Actions, Prometheus, Grafana, Splunk
- **Frontend:** React, Angular, component architecture, accessibility

PROFESSIONAL EXPERIENCE

Amazon Web Services (AWS)

Seattle, WA

Software Development Engineer Intern

Jun 2025 — Aug 2025

- Architected a decoupled serverless pricing workflow in **Java** with **AWS Lambda** and **Step Functions** for state orchestration, idempotency, retries, and blast-radius isolation.
- Delivered a **React** front end over hardened REST APIs that helped eliminate a recurring class of **SEV-2** incidents and cut onboarding from about 30 days to less than **1 hour**.
- Partnered with product and security on design reviews, test plans, and a phased rollout. Work was projected to unlock **\$10M+** in monthly contract value.

BNY Mellon

Chennai, India

Software Engineer

Jul 2023 — Aug 2024

America's oldest bank (est. 1784) and the world's largest custodian, with over 49 trillion USD in assets under custody.

- Built a real-time **CDC/ETL** pipeline (**Java**, **Python**, Pentaho) from Oracle to Snowflake processing **5+ TB**. Key-range partitioning and parallel loaders reduced runtime by about **80%**.
- Modernized a critical reporting platform to **Spring Boot 3**. Authored RFCs and a migration playbook. Executed a zero-downtime cutover and remediated **21** CVEs.
- Cut **p99** query latency roughly in half by tuning SQL views and execution plans for user-facing **analytics dashboards**.
- Shipped an **NLP** document-triage classifier in Python (scikit-learn) with about **90%** accuracy that reduced manual QA review by roughly **70%**.
- Implemented versioned **S3** backups and GitLab CI/CD disaster-recovery flows for **50+** Teradata tables. Recovery time dropped to about **18 minutes**.
- **Leadership and enablement:** Release coordinator across **20+** applications with zero incidents. Mentored six interns on observability and incident response. Led Angular workshops for **50+** developers and standardized post-mortems and alert hygiene, cutting recurrence by about **60%**.
- Built GLOSS Invoice, Mutual Fund, and User Platform Access reports (Teradata/WebFocus) used by broker-dealers and improved multi-client analytics.

Accolite Digital
Software Developer Intern

Chennai, India
Jun 2022 — Aug 2022

- Owned a full-stack employee onboarding portal with **React** and **Spring Boot**. Designed REST APIs, the component architecture, and the schema. Adopted by **300+** new hires.

NIELIT
Data Science Intern

Chennai, India
Jun 2021 — Aug 2021

- Built a fraud-detection model in scikit-learn on **1M+** transactions. Improved the baseline by about **15%**.

OPEN-SOURCE PROJECTS

AniMusic — AI Recommender (*Python, PyTorch, FastAPI, Chrome Extension*) [GitHub]

- Hybrid recommendations that combine content signals (TF-IDF and transformer embeddings) with graph-based collaborative filtering to address cold-start.
- Online learning from implicit feedback such as watch time and skips. **~25%** higher engagement.
- FastAPI service with response caching. k6 sustained roughly **~600 RPS** and **p95 less than 200 ms** on cached paths.
- Chrome extension User Interface with AniList Login Enablement.

XQL — XML → SQL Compiler (*Python, Compiler Design, PostgreSQL*) [GitHub]

- Lexer, recursive-descent parser, and an AST that transpiles an XML query language into optimized SQL across engines.
- Demonstrates compiler fundamentals such as tokenization, operator precedence, and semantic checks, along with practical SQL optimization.

PharmaId — Medication Microservice (*Java, Spring Boot, PostgreSQL, GCP*) [GitHub]

- Secure RBAC-gated API with JWTs and comprehensive Swagger/OpenAPI contracts for external consumers.
- Policy checks, audit trails, and validation layers with CI/CD on Cloud Run and **>90%** JaCoCo coverage.
- Schema design for medication lists, prescriptions, and provider roles with idempotent writes and request tracing.

ADDITIONAL TECHNICAL PROJECTS

Programming Error Detection & Auto-Correction (*C, Python, PyTorch, NLP*)

- Multi-stage pipeline with LSTM embeddings for next-token modeling and an SVM classifier to surface logic defects in C programs.
- Custom tokenizer via Clang AST and edit-distance patch suggestions. Achieved about **90%** detection on held-out assignments.

Real-time Fraud Detection (POC) (*AWS SageMaker, Lambda, Kinesis, DynamoDB*)

- Streaming anomaly detection with isolation forest and rules overlays. Idempotent sinks and DLQs with CloudWatch alerts and dashboards.

MultiMind — Parallel LLM Runner (*Docker, Python, Microservices*)

- Evaluation harness that fans out prompts across GPT, Claude, Gemini, and LLaMA with rate limiting, caching, and metric capture.

University Admission Predictor (*Python, Flask, IBM Watson*)

- Led a 5-person team (Anna University-IBM initiative) to build and deploy an admission predictor service.

Healthcare Q&A — RAG System (*Python, LangChain, FAISS, Async*)

- Retrieval-augmented generation with FAISS vector search and trie-based term matching to improve recall.

Network Protocol Simulation Suite (*C++, Systems Programming*)

- Simulated FTP, SMTP, HTTP, and DNS using sockets and concurrency with state machines and connection pools.

EDUCATION

Columbia University in the City of New York
M.S. in Computer Science, GPA: 3.87/4.0

New York, NY
Aug 2024 — Dec 2025

- Coursework:** Operating Systems, Compiler Engineering, Databases, Software Engineering, Algorithms, Applied Machine Learning, Natural Language Processing
- Research courses:** Recommendation Systems, Agentic AI (in progress)

College of Engineering Guindy (CEG), Anna University
B.Tech. in Information Technology, First Class with Distinction, CGPA: 9.34/10.0

Chennai, India
Jul 2019 — Apr 2023

- Core coursework:** Distributed and Cloud Computing, Artificial Intelligence, Data Science and Analytics, Machine Learning, Computer Networks, Cryptography and Network Security, Computer Architecture, Web Technologies, OOP and Advanced Data Structures, Mobile Computing