

Rohan Singh

Ashburn, VA | (240) 386-7502 | rohan.singh04@outlook.com | [linkedin.com/in/rohansingh4/](https://www.linkedin.com/in/rohansingh4/) | github.com/RohanSi4

EDUCATION

University of Virginia

Charlottesville, VA

BS in Computer Science – Minor in Data Science

May 2027

- Relevant Coursework: Data Structures & Algorithms, Machine Learning, Software Engineering, Database Systems, Statistics, Computer Systems & Organization

EXPERIENCE

Expedia Group

Jun 2026 – Present

Machine Learning Intern | Python, PyTorch, SQL

San Jose, CA

- Incoming ML intern on the **Membership & Engagement** team, building personalization and member retention models.

Freddie Mac

May 2025 – Jul 2025

Software Engineer Intern | Java, TypeScript, Spring Boot, Angular

McLean, VA

- Built **Java Spring Boot** microservices that process and validate 120k accounting events, deploying via **Jenkins** CI/CD.
- Designed **GraphQL** schema and resolvers to consolidate 200+ REST endpoints, cutting **Angular** client payload by 60%.
- Led POC comparing **Playwright** and **Cypress**, achieving **4x faster** tests from 8 to 2mins and driving tool migration.
- Automated nightly data refresh via **Python + Jenkins**, moving datasets to UAT and cutting load time 2hrs to 10mins.
- Applied business rules to classify transactions, ingesting data from **AWS S3** and storing results in **MongoDB**.

Biocomplexity Institute

Nov 2024 – May 2025

AI/ML Research Assistant | Python, Slurm

Charlottesville, VA

- Built scalable graph-analysis pipelines with **cuGraph**, **SciPy**, and **NetworkX** on 1.2M-edge ICIJ and crypto graphs.
- Raised AUC-ROC from 0.55 (logistic baseline) to **0.76**, surfacing **250 anomalies** at **89%** precision for future auditors.
- Applied advanced centrality metrics and **One-Class SVM** to flag and rank illicit transaction patterns in networks.
- Optimized GPU-parallel workflows via **cuGraph**, scaling end-to-end anomaly detection to **2M+ nodes and edges**.
- Validated model on IBM **AMLSim** sandbox, confirming robust performance across real and synthetic financial graphs.

PROJECTS

Personalized Movie Ranking System | Go, Python, LightGBM, Next.js

Dec 2025 – Jan 2026

- Built a production-style movie ranking system with offline ML training and a low-latency **Go** API for ranking queries.
- Ingested and validated the **MovieLens 32M** dataset (200,948 users, 87,585 movies) and enriched items via **TMDB**.
- Trained a **LightGBM** ranker with time-based splits, improving **NDCG@10** by **11.8%** vs baseline on **3.20M rows**.
- Implemented a **Go HTTP** service ranking movies from precomputed features with **16.6ms p95 latency**.
- Built a lightweight **Next.js + Tailwind** demo UI with movie search and ranked result cards for demos.

Spotify Recommender System | Python, Streamlit, Spotipy, Pandas, NumPy

May 2025 – Present

- Built a hybrid playlist generator using the **Spotify Web API** to pull user history, audio features, and artist data.
- Developed ranking logic blending cosine similarity with Spotify's rec engine, reaching a **64% match rate@25**.
- Implemented a **Streamlit** interface with mood, content, and artist modes, generating playlists in **sub-500ms**.
- Integrated **OAuth** authentication with cached tokens, reducing redundant Spotify API calls by **42%**.
- Designed modular collectors and recommenders enabling future ML models and expanded playlist personalization.

Health Score Dashboard | Swift, SwiftUI, HealthKit, Swift Charts

Apr 2025 – Present

- Built a native **iOS** app with **SwiftUI** and **HealthKit** tracking sleep, steps, and activity with daily health recaps.
- Designed a multi-factor sleep score algorithm (duration, efficiency, wake-time consistency) with asymmetric scoring curves.
- Integrated **HealthKit** to ingest sleep sessions and movement data, computing **7-day rolling averages** and delta comparisons.
- Built scheduled morning **UNUserNotification** alerts with a sleep highlight deep-linking to the daily recap view.
- Visualized weekly trends with **Swift Charts**; developed per Apple's Human Interface Guidelines.

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, TypeScript, Go, C++, SQL

Frameworks & Libraries: React, Next.js, Angular, Spring Boot, Flask, GraphQL, LightGBM, scikit-learn, SciPy, NetworkX, cuGraph, REST, Tailwind CSS

Cloud & DevOps: AWS, Azure, Docker, Jenkins, Gradle, Terraform, Git, Cypress, Playwright, Cucumber

Databases: MongoDB, PostgreSQL, MySQL

Certifications: AWS Cloud Practitioner, Oracle Cloud Infrastructure Generative AI Professional, PCAP