

Manav Garkel

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<https://manavgarkel.com/>

Software Engineer with 4+ years of experience building scalable backend systems, APIs, and AI-powered solutions. Seeking a backend-focused role involving GenAI feature development to deliver high-impact, production-ready products.

WORK EXPERIENCE

Freddie Mac

McLean, VA May 2021 - Current

Sr. Software Engineer

- Developing **Mercury+**, a **Flask-based Python** forecasting and analysis platform enabling **Freddie Mac's finance division** to forecast **loans and securities performance under varying economic scenarios**, improving risk and loss assessments, and significantly reducing manual reporting.
- Led a 12-month initiative for ERCF capital reporting **reducing a 24-48 hour manual reporting process to 15 minutes**, acting as both **project manager and lead engineer**—drove the project through **development and user acceptance testing**, conducting in-depth financial analysis to validate Mercury+ outputs against acceptance criteria while ensuring **on-time production deployment**.
- Leading development of an **ETL feature** that integrates forecasted loan and securities performance with capital calculations, enabling the **company to project future capital requirements** vastly improving and **automating Freddie Mac's risk-assessment efforts**.
- Developed a **Python microservice with FastAPI** to deliver streamlined, secure, and high-performance access to company data sources, implementing **OAuth 2.0 authentication** to prevent unauthorized access.

Selling.com

Alexandria, VA March 2023 - March 2024

AI Engineer (Freelance)

- Engineered a new capability for a B2B sales platform to deliver daily ingested corporate news, enabling sales teams to personalize outreach.
- Designed and automated a **web-scraping ETL pipeline** to collect and process **10,000+ news articles** per day.
- Integrated **GPT-3.5/4-turbo** for **named entity recognition to extract company names** and utilized **few-shot prompting for multi-label classification** of news articles across 21 categories.
- Architected and built a **robust, scalable, cloud-native data pipeline using AWS DynamoDB, SQS, and S3** for high availability and performance.

SyncLayer Inc.

Fairfax, VA Feb 2021 - Sep 2021

Software Engineering Intern

- Developed features for a **geospatial analytics web-application** that ingests historical and live mobile tower data, enabling law enforcement agencies to track suspect movements and investigate crime scenes more efficiently.
- Enhanced the **SMS orchestration service in Groovy using Twilio API** to send users automated text messages based on user alerts and notification settings
- Implemented **frontend (vanilla JS) and backend (Groovy)** functionality in the web-application to provide users a new phone number lookup feature using **Twilio API**

PROJECTS

- codebase-assistant** - Building a codebase assistant that ingests GitHub repositories into a **ChromaDB** vector store using **text-embedding-ada-002**, and uses a **LangGraph orchestrated agentic** workflow allowing users to query the codebase.

SOFTWARE SKILLS

- Languages:** Python, Java, JavaScript, SQL, Bash, Groovy, PySpark, C, C++, MATLAB
- Web & API Development:** Flask, FastAPI, Requests, Streamlit, Node.js/Express, RESTful APIs, HTML5, CSS, jQuery
- Databases:** Oracle, IBM DB2, Sybase, MSSQL, DynamoDB, MongoDB, Snowflake
- DevOps & Tools:** Docker, Kubernetes, CI-CD, Jenkins, Git, Linux/Unix, Poetry, OAuth2.0, Postman
- Cloud Platforms:** AWS, GCP, Azure
- Testing & Automation:** Pytest, monkeypatch, FitNesse, Integration & Regression Testing
- AI & ML:** LangChain, LangGraph, OpenAI, ChromaDB, FAISS, llama-index, Scikit-learn
- Other:** Pandas, NumPy, Microservices, Agile Methodologies, JIRA

EDUCATION

George Mason University

Master of Science in Computer Science: GPA: 3.9/4.0

Fairfax, VA

May 2019 - May 2021

University of California, San Diego

Bachelor of Science in Chemical Engineering: Major GPA: 3.7/4.0

San Diego, CA

Sept 2012 - Dec 2016