

# MARASANIGE SAMARTH MAHENDRA

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## EDUCATION

### Northeastern University

January 2024 - December 2025

Master's, Computer Science

- Relevant coursework: Programming Design, Software Engineering, Database Systems, Computer Systems, Algorithms, NLP/ML, Mobile Development

### Dayananda Sagar College of Engineering

August 2018 - July 2022

Bachelor's, Computer Science

## SKILLS

**Languages:** Python, Java, C/C++, SQL, NoSQL, JavaScript, TypeScript, HTML/CSS

**Frameworks & Libraries:** Django REST Framework, Flask, React.js, Node.js

**Databases:** PostgreSQL, Elasticsearch, MongoDB, Redis

**Cloud & DevOps:** AWS, Terraform, Docker, Kubernetes, Prometheus, Datadog, Celery

**System Design & Concepts:** Microservices, REST APIs, System Design, scalable backend, distributed systems, Data structures and Algorithms, Solved 400+ problems on LeetCode (Top 1.6% of all LeetCode accounts (by global rank))

## PROFESSIONAL EXPERIENCE

### Draup (B2B AI/SaaS, AI-Driven Sales, Talent Intelligence Platform)

Bengaluru, KA, India

Associate Software Development Engineer

August 2022 - November 2023

- Maintained and enhanced core platform modules across digital stack, outsourcing, customer, and university features, ensuring reliable operation and scalability.
- Designed a dynamic query framework enabling real-time data aggregation, improving chatbot performance by 60% and cutting new entity development time by 80%.
- Revamped filtering logic to support boolean modifiers operators and nested conditions, unlocking complex query composition for users.
- Developed 100+ modular REST APIs using Python, Django REST Framework, and PostgreSQL, with Redis caching and Celery workers for async task execution.
- Implemented subscription-based access control to manage app-level permissions and feature visibility.
- Led migration from PostgreSQL to Elasticsearch, enabling real-time analytics with 5x faster queries and higher scalability.
- Applied query optimization (partitioning, indexing, view creation) to achieve 400% faster execution and 50% lower operational cost.
- Built Datadog + AWS CloudWatch dashboards to monitor system health, reducing downtime from 4% to 1% and accelerating issue resolution by 75%.

Associate Software Development Engineer Intern

April 2022 - July 2022

- Built Datadog dashboards, integrated AWS CloudWatch alarms to monitor platform health, reducing issue resolution time by 30%.
- Implemented caching to improve efficiency of image requests, resulting in a 70% reduction in load times.
- Developed self-running Jenkins jobs for database cleanup, cutting manual effort and improving efficiency by 25%.

## PROJECTS & OUTSIDE EXPERIENCE

### ButterDB — High-Performance Buffered B-Tree Key-Value Store (C, Python)

Remote

C Programming · B-Tree Engine · WAL · Page-Based I/O · Concurrency Control · Disk I/O Optimization

October 2025 - November 2025

- Built a concurrent single-node TCP key-value database with custom on-disk B-Tree engine and write buffering (Be-Tree).
- Implemented fixed-page file IO, per-node locking, Write-Ahead Logging (WAL), and crash recovery for durability and concurrency.
- Designed benchmarking and metrics collection to evaluate throughput, latency, and flush efficiency under mixed read/write workloads.
- Achieved ~8x higher insert throughput via batched buffer propagation and IO batching; code structured for systems-level performance experiments.

### Open Jobs Analytics Platform – Backend Infra + Monitoring

Boston, MA, USA

Tech stack: Puppeteer, Python, Redis, Celery, MongoDB, Grafana, Prometheus, GPT-4o

December 2024 - December 2024

- Designed a producer-consumer architecture using Celery, integrated with Prometheus and Grafana, achieving 99.9% uptime.
- Scraped dynamic web pages with Playwright and Puppeteer, harvesting 1000+ data points daily.
- LLM-powered CSS selector extraction reduced new-site onboarding by 90%.
- Enhanced stealth capabilities with random headers, user agents, referrer headers, and OS configurations, reducing bot detection by up to 90%.

### Real-Time AI Voice Assistant & Intelligent Agent Platform | OpenAI GPT-4o, Twilio, Discord, FastAPI

Boston, MA, USA

Tech stack: OpenAI GPT-4o, Twilio, Celery, FastAPI, Discord, Websockets, Render (deployment), Redis

April 2025 - May 2025

- Architected an agent system integrating OpenAI GPT-4 + Google Gemini with modular tools, dynamic function calling, and profile-aware responses via MongoDB and Discord.
- Built a scalable async backend with FastAPI + WebSockets, deployed on Render with a Celery worker handling long-running tool calls and real-time audio coordination.
- Deployed live demo via public phone number (833) 970-3274 using Twilio, showcasing job-query answering, system prompts with resume context, and cross-platform communication.

### StackOverflow

February 2025 - April 2025

Full-Stack Q&A Platform (StackOverflow Clone) | TypeScript, JavaScript, React.js, Node.js, MongoDB, Cypress, Jest, CodeQL, DevOps

- Developed a full-stack Q&A system using React + Node.js/TypeScript with MVC backend, comprehensive Cypress/Jest testing, and CI/CD via GitHub Actions + CodeQL.