

# MARASANIGE SAMARTH MAHENDRA

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## EDUCATION

<b>Northeastern University</b> <i>Master's, Computer Science</i> <ul style="list-style-type: none"><li>Relevant coursework: Programming Design, Software Engineering, Database Systems, Computer Systems, Algorithms, NLP/ML, Mobile Development</li></ul>	<b>January 2024 - December 2025</b>
<b>Dayananda Sagar College of Engineering</b> <i>Bachelor's, Computer Science</i>	<b>August 2018 - July 2022</b>

## 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
- Systems:** TCP/IP, Locking, Profiling, CPU microarchitecture, lock-free concurrency, cache optimization (L1/L2/L3), async I/O, Multi-threaded Design
- 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

<b>Draup</b> <i>Associate Software Development Engineer</i> <ul style="list-style-type: none"><li>Maintained and enhanced core platform modules across digital stack, outsourcing, customer, and university features, ensuring reliable operation and scalability.</li><li>Designed a dynamic query framework enabling real-time data aggregation, improving chatbot performance by 60% and cutting new entity development time by 80%.</li><li>Revamped filtering logic to support boolean modifiers operators and nested conditions, unlocking complex query composition for users.</li><li>Developed 100+ modular REST APIs using Python, Django REST Framework, and PostgreSQL, with Redis caching and Celery workers for async task execution.</li><li>Implemented subscription-based access control to manage app-level permissions and feature visibility.</li><li>Led migration from PostgreSQL to Elasticsearch, enabling real-time analytics with 5x faster queries and higher scalability.</li><li>Applied query optimization (partitioning, indexing, view creation) to achieve 400% faster execution and 50% lower operational cost.</li><li>Built Datadog + AWS CloudWatch dashboards to monitor system health, reducing downtime from 4% to 1% and accelerating issue resolution by 75%.</li></ul>	<b>Bengaluru, KA, India</b> <i>August 2022 - November 2023</i>
<i>Associate Software Development Engineer Intern</i> <ul style="list-style-type: none"><li>Built Datadog dashboards, integrated AWS CloudWatch alarms to monitor platform health, reducing issue resolution time by 30%.</li><li>Implemented caching to improve efficiency of image requests, resulting in a 70% reduction in load times.</li><li>Developed self-running Jenkins jobs for database cleanup, cutting manual effort and improving efficiency by 25%.</li></ul>	<i>April 2022 - July 2022</i>

## PROJECTS & OUTSIDE EXPERIENCE

<b>ButterDB — High-Performance Buffered B-Tree Key-Value Store (C, Python)</b> <i>Python, (C, Concurrency, WAL)</i> <ul style="list-style-type: none"><li>Built a concurrent single-node TCP key-value database with custom on-disk B-Tree engine and write buffering (Be-Tree).</li><li>Implemented fixed-page file IO, per-node locking, Write-Ahead Logging (WAL), and crash recovery for durability and concurrency.</li><li>Designed benchmarking and metrics collection to evaluate throughput, latency, and flush efficiency under mixed read/write workloads.</li><li>Achieved ~8x higher insert throughput via batched buffer propagation and IO batching; code structured for systems-level performance experiments.</li></ul>	<b>Remote</b> <i>October 2025 - Present</i>
<b>Open Jobs Analytics Platform – Backend Infra + Monitoring</b> <i>Tech stack: Puppeteer, Python, Redis, Celery, MongoDB, Grafana, Prometheus, GPT-4o</i> <ul style="list-style-type: none"><li>Designed a producer-consumer architecture using Celery, integrated with Prometheus and Grafana, achieving 99.9% uptime.</li><li>Scraped dynamic web pages with Playwright and Puppeteer, harvesting 1000+ data points daily.</li><li>LLM-powered CSS selector extraction reduced new-site onboarding by 90%.</li><li>Enhanced stealth capabilities with random headers, user agents, referrer headers, and OS configurations, reducing bot detection by up to 90%.</li></ul>	<b>Boston, MA, USA</b> <i>December 2024 - Present</i>
<b>Real-Time AI Voice Assistant &amp; Intelligent Agent Platform   OpenAI GPT-4o, Twilio, Discord, FastAPI</b> <i>Tech stack: OpenAI GPT-4O, Twilio, Celery, FastAPI, Discord, Websockets, Render (deployment), Redis</i> <ul style="list-style-type: none"><li>Architected an agent system integrating OpenAI GPT-4 + Google Gemini with modular tools, dynamic function calling, and profile-aware responses via MongoDB and Discord.</li><li>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.</li><li>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.</li></ul>	<b>Boston, MA, USA</b> <i>April 2025 - May 2025</i>
<b>StackOverflow</b> <i>Full-Stack Q&amp;A Platform (StackOverflow Clone)   TypeScript, JavaScript, React.js, Node.js, MongoDB, Cypress, Jest, CodeQL, DevOps</i> <ul style="list-style-type: none"><li>Developed a full-stack Q&amp;A system using React + Node.js/TypeScript with MVC backend, comprehensive Cypress/Jest testing, and CI/CD via GitHub Actions + CodeQL.</li></ul>	<i>February 2025 - April 2025</i>