

# Utsha Ghosh

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## Summary

Full-Stack Software Engineer with experience developing scalable, high-performance web applications across diverse domains. Strong focus on clean architecture, user experience, and building reliable, data-driven solutions that drive business impact.

## Skills

Python, React.js, Next.js, TypeScript, JavaScript (ES6+), Redux, Material UI, Node.js, Django, Express.js, GraphQL, REST APIs, Microservices Architecture, AWS (S3, CloudFront, Lambda, EC2), Docker, CI/CD (GitHub Actions), Redis, Load Balancing, Web Performance Optimization, PostgreSQL, MySQL, MongoDB, D3.js, Recharts, WebGL, LangChain, OpenAI API, Vector Databases, Prompt Engineering, DynamoDB, CI/CD Automation, REST API Security

## Experience

**Springboard Incubators Inc.** - Software Engineer

**May 2023 - Present**

Built and scaled an AI-powered e-learning platform for **100K+ users**, delivering secure video streaming, responsive dashboards, and real-time learning analytics.

- Developed and scaled the E-Learning platform from **5K to 100K+ users**, enhancing performance and reliability across web and mobile clients.
- Architected and optimized adaptive bitrate video streaming using AWS S3, CloudFront, and HLS, reducing buffering by 40% and achieving 99.97% uptime for 100K+ active users.
- Built an AI-powered learning assistant using LangChain and OpenAI API, integrating RAG pipelines with ChromaDB to provide contextual responses and reduce manual support tickets by 25%.
- Developed Python-based microservices for LLM inference orchestration and knowledge retrieval, enabling multi-step agent workflows.
- Built React.js + TypeScript dashboards with lazy loading and API caching, improving page load speed by 35% and cutting network payload by 30%.
- Integrated GraphQL APIs to replace REST endpoints, streamlining data fetching and reducing over-fetching by 25%.
- Enhanced API performance through query optimization and caching, supporting up to 2K+ concurrent requests with sub-300ms response times.
- Implemented server-driven UI components, enabling feature experimentation without redeployments and accelerating A/B testing cycles by 50%.
- Deployed CI/CD pipelines via GitHub Actions and Docker, reducing deployment times from hours to under 15 minutes.
- Added AWS CloudWatch observability and structured event logging, decreasing **mean-time-to-detect (MTTD) by 30%** for production incidents.
- Collaborated with AI teams to integrate LangChain and OpenAI API into a student-facing chatbot, cutting manual support tickets by 25%.
- Partnered with design and product to deliver accessibility-compliant, responsive UIs, increasing student satisfaction scores by 18%.

**Boneflare Wellness** - Full Stack Engineer

**May 2020 - Dec 2021**

Developed full-stack healthcare analytics tools for real-time patient monitoring, improving data performance, system reliability, and deployment efficiency.

- Developed a responsive React + TypeScript dashboard for healthcare analytics, improving engagement by 20%.
- Refactored legacy JavaScript into modular TypeScript components, reducing bugs by 35%.
- Optimized API workflows and caching, cutting data-fetch latency by 30%.
- Tuned performance with Webpack and Lighthouse audits to sustain 60 FPS rendering.
- Collaborated with backend engineers to design RESTful endpoints in Node.js, improving data reliability and synchronization.
- Implemented CI/CD pipelines with GitHub Actions, reducing deployment time by 40% and improving release consistency.

**Atoll Solutions** - Software Engineer

**June 2018 - April 2020**

Engineered scalable geospatial tracking systems for **300K+ devices**, optimizing APIs, dashboards, and map-based data visualization for high performance and uptime.

- Scaled a real-time asset tracking system from **2K to 300K+ active users**, optimizing data flow, backend throughput, and frontend rendering speed.
- Re-architected Google Maps API integrations using asynchronous updates and WebSockets, reducing map refresh latency by 60% and supporting 10K+ simultaneous updates.
- Migrated API infrastructure to Node.js microservices with Redis caching, achieving sub-200ms average response time and improving scalability by 5x.
- Implemented sharded PostgreSQL database models and load balancing with NGINX, sustaining 10x growth in concurrent traffic without downtime.
- Built interactive D3.js and Recharts dashboards for visualizing 100K+ tracked devices, increasing system usability scores by 30% among field operators.
- Containerized services using Docker and deployed auto-scaling infrastructure on AWS EC2, maintaining 99.9% uptime during peak operations.
- Optimized geospatial query performance through indexing and parallelization, reducing computation time by 45% for complex multi-region queries.

- Enhanced frontend code efficiency by modularizing React components, cutting redundant re-renders by 25% and improving maintainability.
- Collaborated with product and client teams to implement multi-tenant user management and secure API authentication, ensuring 100% compliance with enterprise data standards.

## Projects

### Prompt Enhancer

*Chrome Extension (Frontend) • Next.js, Node.js/Express, MongoDB, Redis, OpenAI API, AWS*

- Built a Chrome extension integrated directly into the ChatGPT textbox, providing one-click prompt enhancement with improved grammar, clarity, and context.
- Designed a clean **Next.js** frontend with an inline enhance button, side-by-side preview of original vs. enhanced prompts, and an optional “use history” toggle.
- Integrated the **OpenAI API** in the backend to rephrase ambiguous prompts into context-aware, well-structured queries.
- Implemented backend services with **Node.js/Express**, storing structured session synopses in **MongoDB** and enforcing daily usage limits via **Redis**.

## Education

### New York Institute Of Technology

### Master's in Computer Science

**Relevant Courses** - Software Engineering, Database Systems, Algorithm Concepts, Programming Languages, Computer Networks, Introduction to Data Mining, Machine Learning