Sabin Chapagain

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Summary

Experienced and results-driven Backend Developer with over four years of proven success in designing, building, and scaling robust backend systems using Node.js and Django. My expertise includes high-efficiency RESTful and GraphQL APIs, real-time communication with Socket.IO, and integrating diverse messaging systems such as RabbitMQ and Kafka. I apply strong architectural principles and problem-solving abilities to deliver production-ready features and improve system performance.

Experience

Software Engineer, Innovate Tech – New Baneshwor, Kathmandu   Feb 2023 – Current

- Developed scalable, distributed backend systems using **Node.js** and Express, applying microservice architecture and design patterns.
- Designed and built RESTful and **GraphQL** APIs, reducing data over-fetching by 40% to support chat features and improve data querying efficiency.
- Implemented real-time communication with **Socket.IO**, enabling instant messaging for 10K+ users and managing namespaces for different connection types.
- Improved legacy codebase by reorganizing folder structure and optimizing database design for better performance and maintainability.
- Integrated **Firebase Cloud Messaging (FCM)** to send topic-based push notifications to targeted user groups.
- Created **AWS Lambda** functions for serverless bulk upload of users and classes, reducing manual effort and improving efficiency.
- Used **RabbitMQ** and **Kafka** to enable smooth and reliable message queueing and interservice communication, improving system throughput by 35%.
- Connected chat back-end to the main back-end via **gRPC** for efficient data sharing between services.
- Managed a monorepo containing chat back-end, socket server, and queue service to streamline development.
- Conducted load testing with **Artillery** to ensure system stability under high traffic.
- Mentored junior developers on best practices for Node.js and distributed system design, fostering team growth and code quality.

MERN Stack Developer, Semantic Creation – Pulchowk, Lalitpur   Sep 2021 – Feb 2023 (Remote, Full-time)

- Led backend development as the sole backend engineer, architecting scalable and dynamic systems using the **MERN Stack (MongoDB, Express, React, Node.js)**.
- Closely collaborated with UI/UX designers and frontend engineers to ensure seamless integration and optimal user experience across web applications.
- Built a robust admin dashboard using **React.js** and **Redux**, enabling efficient management of application data by internal stakeholders.
- Designed and optimized complex **MongoDB aggregation pipelines** to support advanced filtering, grouping, and analytics features on large datasets.
- Integrated external APIs and services including **payment gateways**, **geolocation**, and **social media SDKs** to enhance application functionality.
- Developed real-time features using **Socket.IO**, such as live status updates and user notifications.
- Leveraged **Redis** for caching frequently accessed data and session management, improving response time and scalability.
- Participated in agile sprint planning, conducted code reviews, and maintained clean code practices to ensure maintainability and timely delivery of features.

Backend Developer, Anka Ek – Anamnagar, Kathmandu (Remote, June 2021 – Feb 2023
Part-time)

- Developed server-side components for mobile games using **Node.js** and **Express**.
- Built backend features for a social networking app using **Django** and **PostgreSQL**.
- Provided technical mentorship to junior developers, promoting team learning and growth.
- Designed and optimized database schemas for efficient data storage and retrieval.
- Used **Redis** caching to improve data access speed and overall app performance, reducing database load by 30% .
- Deployed Node.js applications on **AWS Elastic Beanstalk** and managed media storage with **AWS S3**.
- Identified and resolved N+1 query issues using debugging tools, improving overall page load performance by 1.5 seconds.
- Implemented complex queries with Django ORM and used stored procedures for optimized database operations.
- Integrated multiple payment gateways: **Stripe** (international), **Khalti**, and **IME Pay** (Nepal).
- Ensured data consistency using Django transactions following ACID principles.
- Wrote tests using **Django.test** and set up CI/CD pipelines with **GitHub Actions** for automated testing and deployment.

Projects

Tax Assistant Chatbot (RAG-Based)   Live: tax-chatbot.sabinchapagain.com.np/

Repo: github.com/csabinji/tax-assistant-rag

- Developed a full-stack AI-powered tax assistant chatbot using **Retrieval-Augmented Generation (RAG)** architecture and open-source LLMs via **OpenRouter**.
- Implemented a **Python**-based retriever microservice using **FastAPI**, **ChromaDB**, **Langchain** and **SentenceTransformers** to perform semantic similarity search on a curated lyrics dataset.
- Designed a **Node.js (Express)** generator service to dynamically augment prompts with relevant context and interface with OpenRouter's Chat Completion API.
- Built a responsive **React** frontend with chat-style UX, typing animations, timestamped history, and real-time chat assistant experience; frontend is hosted on **Cloudflare Pages** with a custom domain.
- Containerized backend services using **Docker** and deployed on **Render** for scalable, managed hosting.

AI-Powered Blog Post Generator   Repo: github.com/csabinji/blog-post-generator/

- Designed and built an automated blog generation backend that uses LLMs (DeepSeek, OpenRouter) to create topic-based posts.
- Dynamically generates prompts using topic category configurations and posting styles.
- Publishes generated content to **Hashnode** and **Blogger** using platform APIs with OAuth2 authentication.
- Used **MongoDB** for topic configs and tracking posted content to avoid duplication.
- Hosted backend on **Render** with a **GitHub Actions** cron job running every hour to automate content generation and posting.

Education

Softwarica College of IT and E-Commerce, BSc. (Hons) Computing   June 2018 - September 2021

Himalaya Secondary School, High School (+2 Science)   April 2016 - January 2018

Technologies

Languages & Frameworks: JavaScript/TypeScript (Node.js, Express, tsoa, Koa), Python (Django), React

Databases & Messaging: MongoDB, PostgreSQL, Redis, Apache Kafka, RabbitMQ, Socket.IO, gRPC

DevOps & Cloud: Docker, CI/CD, AWS (EC2, S3, Lambda, SQS), Git

Architecture & Authentication: REST APIs, GraphQL, Microservices, Monorepo (Nx), JWT, OAuth