RISHAB SHARMA

Backend / Cloud / IoT Engineer

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SUMMARY

Backend / Cloud Engineer and Full-Stack JavaScript Developer with 4+ years of experience building cloud applications, IoT platforms, event-driven backend systems, automation engines, and modern web applications. Strong hands-on experience with TypeScript, Node.js, NestJS, MongoDB, Redis, BullMQ, AWS IoT Core, MQTT, ECS/Fargate, Lambda, S3, SES, AppSync, DynamoDB, Docker, and CI/CD. Experienced in real-time device and gateway communication, OTA firmware delivery, background job processing, scheduled workflows, REST/GraphQL APIs, and React/Next.js administration interfaces.

TECHNICAL SKILLS

Languages: TypeScript, JavaScript, Python, SQL, HTML, CSS
Backend & APIs: Node.js, NestJS, Express.js, Django, REST APIs, GraphQL, AWS AppSync, WebSockets
IoT & Messaging: AWS IoT Core, MQTT, device/gateway communication, telemetry processing, OTA updates, event-driven architecture
AWS / Cloud: ECS, Fargate, EC2, Lambda, API Gateway, S3, SQS, SES, AppSync, DynamoDB, Amplify, IAM, CloudWatch
Data & Queues: MongoDB, PostgreSQL, MySQL, DynamoDB, Redis, BullMQ, background jobs, delayed jobs, repeatable jobs
Frontend: React.js, Next.js, Redux Toolkit, React Query (TanStack Query), Context API, TailwindCSS, Axios
DevOps & Security: Docker, GitHub Actions, AWS CodeBuild, AWS Amplify, Git, JWT, OAuth, Argon2, IAM
Other: Prisma ORM, Sanity CMS

EXPERIENCE

Nepal Digital Systems, Kathmandu *Dec 2025 - Present*

Backend Engineer

- Develop and maintain the Hypnotik IoT backend using NestJS, TypeScript, MongoDB, Redis, AWS IoT Core, and MQTT for real-time communication between cloud services, gateways, and connected devices.
- Design event-driven workflows for device telemetry, gateway/device online-offline states, OTA events, and real-time device communication.
- Build backend APIs supporting properties, spaces, devices, gateways, users, Thing Groups, permissions, and administrative workflows.
- Developed the OTA firmware management system for releases, targeted deployments, device/gateway targeting, S3 presigned firmware delivery, MQTT-based distribution, and multi-state OTA tracking.
- Implemented OTA targeting across properties, users, Thing Groups, gateway types, device types, and individual gateways/devices, with release and target-preview APIs.
- Designed MQTT topic structures and event flows for device state, gateway state, OTA updates, property/group broadcasts, and gateway/device communication.
- Built gateway-connected slave and relay-controller OTA workflows and maintained device-to-gateway relationships for targeted delivery.
- Designed and implemented a Meshbot automation engine using Trigger -> Conditions -> Time Window -> Guards -> Actions -> Recovery.
- Implemented telemetry, device/gateway online-offline, OTA, and scheduled triggers with duration checks, debouncing, hysteresis, cooldowns, circuit breakers, recovery handling, active alerts, and execution history.
- Implemented restart-safe scheduled automation using BullMQ repeatable jobs, including scheduled execution handling and cooldown bypass for scheduled rules.
- Integrated AWS SES email notifications for automation events, supporting custom recipient lists and property owners; implemented scene-recall actions through the Scene Service.
- Built REST APIs and permission controls for automation management, including CRUD, execution history, active alerts, and notification workflows.
- Developed React/TypeScript admin interfaces for automation rule creation, including a step-by-step rule builder, live summaries, condition/action configuration, execution history, and active alerts.
- Implemented administrative backend improvements for properties, spaces, devices, permissions, and soft-delete workflows, including cross-property space listing and query/index optimization.
- Containerize backend services with Docker and support deployments using AWS ECS/Fargate, GitHub Actions, and AWS CodeBuild.

Gurkha Strategy, USA / Kathmandu *Jul 2024 - Aug 2026*

AWS Backend Development Engineer / React Developer

- Developed and maintained cloud applications using AWS Amplify, React.js, and Next.js, integrating frontend applications with serverless backend services.
- Designed and implemented AWS Lambda functions in Python and Node.js for backend processing and application workflows.
- Managed AWS resources using the Amplify CLI, including environment configuration, deployments, and CI/CD integration.
- Designed and optimized DynamoDB data models and built GraphQL APIs with AWS AppSync for scalable data access and real-time functionality.
- Integrated REST and GraphQL APIs into React and Next.js applications using Axios, Context API, Redux, and React Query.
- Participated in sprint planning, backlog grooming, code collaboration, retrospectives, and delivery of production features.

Silverline Integrators, Kathmandu *Jul 2023 - Jun 2024*

AWS Backend Development Engineer / React Developer

- Developed serverless applications using AWS Amplify, React.js, and Next.js.
- Designed and implemented AWS Lambda functions using Python and Node.js, including API Gateway-triggered backend workflows.
- Managed AWS cloud resources and deployments through the Amplify CLI and contributed to CI/CD workflows.
- Configured and optimized DynamoDB tables for scalable data storage and efficient retrieval.
- Built GraphQL APIs using AWS AppSync and integrated them with frontend applications.
- Implemented Redux-based state management and collaborated with development teams in an agile environment.

General Technology, Kathmandu *Oct 2022 - Jan 2023*

React JS Intern

- Developed user-facing web applications using React.js, React Hooks, and state management.
- Collaborated with designers to implement responsive, user-friendly interfaces and integrated APIs, routing, and application state.
- Debugged and optimized existing frontend code and participated in code reviews to improve quality and consistency.

SELECTED PROJECTS

Hypnotik IoT Platform | *NestJS, TypeScript, AWS IoT Core, MQTT, MongoDB, Redis, BullMQ, ECS/Fargate*

Cloud-based IoT backend platform supporting device/gateway communication, telemetry, OTA firmware delivery, administration, and automation.

- Built event-driven backend services for gateway/device communication, state handling, telemetry, OTA events, and online/offline workflows.
- Implemented targeted OTA releases using S3 presigned firmware delivery and MQTT, plus rule-based automation with scheduled/background execution.

OpenTickets | *AWS Amplify, Lambda, DynamoDB, AppSync, React.js*

Multi-tenant SaaS ticketing platform with dedicated administration portals.

- Developed backend services with Python/Node.js Lambda, DynamoDB, and AppSync GraphQL; managed deployment and CI/CD with Amplify.

Page Pavilion | *Next.js, TypeScript, PostgreSQL, Redis, Auth.js*

Full-stack library management system with public and administrative applications.

- Implemented automated borrowing, reminders, receipts, user management, Redis caching, and authentication.

Bulk Email Processor | *NestJS, Next.js, TypeScript, Redis, BullMQ*

Queue-based email processing platform for large recipient lists.

- Built Excel/CSV upload, template selection, background processing, and real-time job status/progress tracking using BullMQ and Redis.

MERN Real Estate Platform | *MongoDB, Express.js, React.js, Node.js, Redux*

Real estate listing platform built using the MERN stack.

- Developed responsive React interfaces and Express/Node.js REST APIs with MongoDB data management and Redux state management.

NuAndroids | *Next.js, Sanity CMS*

Official event website with dynamic content management.

- Integrated Sanity CMS for event content, blog posts, media updates, client-side editing, and publishing workflows.

Hospital Management System | *Python, Django, MySQL, Google Calendar API*

Healthcare scheduling platform with voice assistant integration.

- Implemented appointment scheduling and patient data workflows with Google Calendar API integration.

EDUCATION

Herald College Kathmandu *May 2019 - Jun 2022*

Bachelor of Information Technology (BIT), First Class Honours

Relevant Coursework: Object-Oriented Programming, Databases, Data Structures & Algorithms, Operating Systems, UI/UX Design, Computer Networks, Machine Learning, Big Data, Image Processing