

SUMALY BAJRACHARYA

Software Engineer — Full-stack

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SUMMARY

Software engineer with 2+ years of experience in full-stack development, building production-ready web applications using MongoDB, React, GraphQL, NestJS, and Node.js. Experience in microservices, database design, building scalable APIs, and developing responsive frontends in Agile teams.

EDUCATION

Master's Degree in Computer Science <i>University of South Dakota</i> — GPA: 4.0/4.0	Aug 2024 – May 2026 (Anticipated) South Dakota, USA
Bachelor's Degree in Computer Engineering <i>Kathmandu Engineering College</i> — GPA: 3.73/4.0	Nov 2017 – Apr 2022 Kathmandu, Nepal

WORK EXPERIENCE

Software Engineer (Full-stack) <i>EB Pearls Pvt. Ltd.</i>	Nov 2022 – Jul 2024 Sydney, Australia (remote)
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- Developed and delivered 3 production-ready end-to-end web applications by building robust **RESTful** and **GraphQL APIs**, making architectural decisions on **data modeling** and API structure, and creating responsive **React** frontends.
- Optimized application performance by 30% using database indexing, aggregation pipelines, and query optimizations.
- Built reusable **React** components and **Redux**-based state management to ensure UI consistency and responsiveness across multiple features and reduce code duplication.
- Integrated **Twilio** for OTP-based SMS authentication, **SendGrid** and **AWS SES** for email functionality to ensure user verification and automate reminders, along with **AWS S3** for image storage and retrieval.
- Implemented **role-based access control (RBAC)** and authentication workflows for a SaaS-based health management application to ensure data privacy and secure access division across various user levels.
- Improved code maintainability using **TypeScript** and implemented centralized exception and error handling using **GraphQL** modules.
- Contributed to peer code reviews and followed coding standards to improve code quality and maintainability.

Software Engineer Trainee <i>EB Pearls Pvt. Ltd.</i>	Apr 2022 – Oct 2022 Sydney, Australia (remote)
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- Built a vehicle auction processing system using node-cron scheduled jobs to process bids and close auctions at scheduled times, with **Mongoose** geo-spatial queries to list vehicles by location for a vehicle auction marketplace, enabling the core revenue-generating feature.
 - Designed and delivered responsive web applications and admin dashboards using **MERN stack** and **NestJS** with **GraphQL** to monitor listings and manage user accounts, following Agile methodologies.
 - Utilized **Postman**, **Swagger**, and **Apollo Studio** for API development, testing, documentation, and querying.
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SKILLS

- **Languages:** JavaScript, TypeScript, Python, SQL, C++, C.
 - **Backend & APIs:** NestJS, Node.js, Express.js, REST APIs, GraphQL.
 - **Frontend:** React, Redux.
 - **Databases:** MongoDB, MySQL.
 - **Cloud & DevOps:** AWS (S3, SES), Twilio (OTP/SMS), SendGrid, Docker, Git, CI/CD.
 - **Tools:** Postman, Swagger, Apollo Studio, Jira, Agile/Scrum methodologies.
 - **AI:** Retrieval-Augmented Generation (RAG), Machine Learning.
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ACADEMIC PROJECTS

Uncertainty-Aware LLM-Guided Policy Shaping for Sparse-Reward RL	Aug 2025 – Dec 2025
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- Proposed a calibrated reinforcement learning framework using a fine-tuned BERT model, Proximal Policy Optimization, Monte Carlo dropout, and A* based oracle in a custom UnlockPickup MiniGrid environment.
- Achieved 99.20% success rate, 2009.96 reward AUC, and reduced the average steps to goal from 35.52 to 8.56, outperforming baseline models and improving decision-making in sparse-reward environments.

Protein Chatbot with FAISS index and LLM integration	Aug 2025 – Dec 2025
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- Leveraged Sentence Transformer (all-MiniLM-L6-v2) to develop a full-stack **RAG**-based web application for querying protein information, with a FAISS IndexFlatL2 for efficient semantic similarity search.
 - Used Llama3.2:1b (via Ollama) to produce semantically accurate answers and containerized the application using **Docker** for cross-platform deployment.
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LEADERSHIP

Entrepreneurial Lead <i>NSF I-Corps Hub Great Plains</i>	Jan 2025 - Feb 2025 & Jun 2025 – Jul 2025 North Dakota, USA (remote)
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- Led 3-member teams in two cohorts to explore the market need for an AI-driven tool in music and legal domains.
- Conducted 40+ interviews and collaborated with technical and business mentors to apply entrepreneurial techniques, like lean startup principles, customer segmentation, ecosystem modeling, and customer value proposition.