

# SUBRATO MANDAL

Software Engineer

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## ABOUT

Computer Science undergraduate with hands-on experience building full-stack web applications and deploying independent projects. Comfortable working across frontend, backend, databases, and cloud platforms. Interested in scalable software, and solving real user problems.

## TECHNICAL SKILLS

**Languages:** TypeScript, JavaScript, Python, SQL

**Frontend:** React, Next.js, Tailwind CSS, Zustand

**Backend:** Node.js, Express.js, REST APIs

**Databases:** PostgreSQL, SQLite, MongoDB

**Cloud and DevOps:** AWS (S3, EC2), Docker, Railway

**Machine Learning:** PyTorch, Hugging Face Transformers, Gradio

**Security:** AES-256-GCM, Argon2id, Presigned URLs

**Tools:** Git, GitHub, MCP, Linux, Postman

## EDUCATION

**Adamas University, Kolkata**

Aug 2023 to Jun 2027

*Bachelor of Technology (B.Tech) in Computer Science Engineering*

## PROJECTS

**S3 Explorer / React, Express.js, TypeScript, SQLite, Docker, AWS S3** | [github.com/subratomandal/s3explorer](https://github.com/subratomandal/s3explorer)

2026

- Engineered a secure full-stack cloud storage management platform supporting AWS S3 and S3-compatible providers, enabling users to browse, upload, and manage objects through a unified React interface.
- Implemented AES-256-GCM encrypted credential storage in the backend, protecting user access keys at rest and eliminating plaintext secret exposure.
- Designed password-based authentication with Argon2id hashing and per-account rate limiting, mitigating brute-force attacks and credential stuffing.
- Generated time-bound presigned URLs for direct client-to-S3 downloads, removing the need to proxy large objects through the backend and reducing server bandwidth.
- Containerized the Express.js backend with Docker and shipped it on Railway with automated builds, enabling reproducible environments and one-click redeployment.

**Epito / Next.js, TypeScript, Tauri, Rust, Tailwind CSS** | [github.com/subratomandal/epito](https://github.com/subratomandal/epito)

2026

- Developed a cross-platform desktop application with Tauri, pairing a Rust backend with a Next.js frontend to produce lightweight native binaries for Windows, macOS, and Linux.
- Architected modular components for inference, memory, and model management, and styled the interface with Tailwind CSS and TypeScript middleware.

**DyeInk / React, TypeScript, MongoDB, Tailwind CSS, Zustand** | [github.com/subratomandal/dyeink](https://github.com/subratomandal/dyeink)

2025

- Build a full-stack blogging platform with a responsive React + Tailwind interface and a Quill-based editor, giving authenticated writers a distraction-free reading and writing experience across devices.
- Designed a MongoDB document model for posts, users, domains, and subscribers, and integrated Auth0 with JWT/JWKS verification on Vercel serverless functions for secure sign-in and session management.
- Wired image uploads to Cloudflare R2 via the S3 SDK and added custom-domain provisioning through the Vercel Domains API, while Zustand kept global client state lean and bundle size small.

**DiabetesSLM / Python, PyTorch, Hugging Face Transformers, Gradio** | [github.com/subratomandal/diabetes](https://github.com/subratomandal/diabetes)

2024

- Fine-tuned a transformer-based language model on a curated diabetes-focused Q&A dataset, producing a domain-specialized small language model for healthcare queries.
- Constructed an inference pipeline in PyTorch covering tokenization, generation, and post-processing to serve answers for natural language medical questions.
- Created a Gradio interface hosted on Hugging Face Spaces, demonstrating the end-to-end ML lifecycle from training to public inference.