

AMAN KUMAR

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PROFILE SUMMARY

Results-driven Software Engineer with a B.Tech in Computer Science and Engineering (graduated 2026), with hands-on experience building production-grade full-stack and AI-powered applications, along with freelance experience solving advanced backend and systems-engineering problems for Handshake AI. Skilled in building scalable REST APIs with Node.js, Express.js, and FastAPI, developing responsive UIs with React.js, and integrating AI/LLM services, secure authentication, and relational/non-relational databases. Proven ability to independently solve complex, specification-driven engineering problems under strict correctness constraints, with strong exposure to Docker, Kubernetes, and monitoring tools.

SKILLS AND TOOLS

Languages:	Python, JavaScript, SQL
Frontend:	HTML5, CSS3, React.js, Tailwind CSS, Chakra UI, React Router DOM, Context API
Backend:	Node.js, Express.js, FastAPI, REST APIs, Async Programming, SQLAlchemy
Databases:	MySQL, MongoDB, PostgreSQL, Redis, Supabase
AI/LLM:	OpenAI Whisper, Google Gemini, Ollama, OpenRouter
DevOps:	Docker, Docker Compose, Kubernetes, Nginx, Prometheus, Grafana, Falco
Tools:	Git, GitHub, VS Code, Postman
Concepts:	JWT & OTP Authentication, RESTful API Design, System Design, SDLC, Dependency Resolution, Data Integrity Verification
Related Coursework:	Data Structures & Algorithms, Object-Oriented Programming, Database Management Systems, Operating Systems, Computer Networks, Software Engineering, System Design

PROFESSIONAL EXPERIENCE

Handshake AI — Freelance Software Engineer / AI Trainer

July 2026 - Present

Remote | Independent Contract Engagements

Project 1: Build, Dependency & Release Management

- Designed and implemented a PEP-440/PEP-508 compliant dependency resolver in Python that computes a canonical, deterministic lockfile from a synthetic package registry.
- Built constraint-based backtracking logic to resolve conflicting version requirements by falling back to lower valid versions of previously selected packages.
- Implemented cyclic dependency detection to identify and reject circular dependency chains, backtracking to a non-cyclic resolution path.
- Handled version-selection edge cases including yanked releases, blocklisted versions, pre-release exclusion, extras resolution, and environment-marker evaluation.
- Implemented compatible-release (~=) and other PEP-440 version specifiers exactly per specification, ensuring correct upper/lower bound calculations.

Related Skills: Python, Dependency Resolution Algorithms, PEP-440/PEP-508 Specifications, Backtracking, Graph Traversal, JSON Processing

Project 2: File & Media Operations

- Built data-recovery tooling to reconstruct segments from corrupted binary archive containers where index tables were missing or segment length fields were unreliable.
- Implemented segment-boundary recovery logic that parses container preambles directly instead of relying on the container's own (untrustworthy) index.
- Validated every reconstructed segment against its embedded checksum, ensuring only independently provable, byte-exact output was accepted and written to disk.
- Generated a structured reconstruction ledger (manifest) reporting the recovery status of every segment discovered across multiple corrupted capsules.
- Followed strict correctness constraints by avoiding synthetic data generation or byte-level patching, and correctly classifying non-reconstructible segments.

Related Skills: Python, Binary Data Parsing, Compression/Decompression, Checksum Verification, Data Integrity, File Format Internals

PERSONAL PROJECTS

Clothify — E-Commerce Platform | GitHub

- Built a full-stack e-commerce application, iterating from a React.js + Tailwind CSS frontend with LocalStorage-based authentication to a complete React + FastAPI (Python) build with product listing, shopping cart, wishlist, order tracking, and a separate admin panel.
- Implemented OTP-based email login using Redis to temporarily store and auto-expire OTPs, removing the need for users to remember passwords.
- Integrated Razorpay for payments and used PostgreSQL to store users, orders, and products, with role-based access for admin and regular users.
- Used React Router DOM for navigation and Context API to manage cart and authentication state globally, so cart updates reflect instantly across the app.
- Built backend-driven product search and filtering by category and price range, returning pre-filtered results from the database.

EchoBrief — AI-Powered Media Transcription & Intelligence Platform | GitHub

- Developed a production-grade platform that converts audio/video into accurate transcripts, AI-generated summaries, and keyword insights using OpenAI Whisper and Google Gemini, with Ollama as a fallback model.
- Built scalable REST APIs using FastAPI for media upload, authentication, job management, and AI transcription workflows.
- Implemented asynchronous processing using Dramatiq and Redis so transcription and summarization jobs run in the background without blocking user requests.
- Integrated Supabase Authentication, Supabase Storage, and PostgreSQL for secure user management, media storage, and metadata persistence.
- Containerized frontend and backend using Docker and Docker Compose, and designed a Kubernetes-ready deployment with network policies, ConfigMaps, Secrets, and persistent storage.
- Configured Prometheus and Grafana dashboards to monitor API performance, Redis queues, and container resource usage; hardened security with JWT authentication, Row-Level Security (RLS), and runtime monitoring using Falco.

Website-Builder — Prompt-to-UI Platform | GitHub | Live Demo

- Integrated an LLM (DeepSeek via OpenRouter API) into a MERN stack application to generate structured website code from natural language prompts using prompt engineering.
- Developed RESTful APIs with Node.js and Express to process AI-generated responses, perform JSON parsing, and dynamically store website data in MongoDB.
- Built a responsive frontend using React (Vite) and integrated Firebase services for real-time data handling.
- Implemented secure authentication (JWT/Firebase Auth) and a credit-based system with Stripe integration to support a scalable, monetizable SaaS architecture.

CynoHub — Authentication & API Platform | GitHub

- Developed a secure authentication system (signup & login) using MongoDB, with protected/private routes ensuring pages are accessible only to authenticated users.
- Integrated frontend authentication flows with backend APIs, enforcing authentication-based access control and seamless user validation.
- Built a responsive, scalable React application using Chakra UI and component-based architecture to improve UI consistency and maintainability.

EDUCATION

B.Tech in Computer Science and Engineering

Techno International New Town, Kolkata

2022 - 2026

CGPA: 6.7 / 10

ACHIEVEMENTS

- Solved 100+ DSA problems across LeetCode and GeeksforGeeks, strengthening problem-solving skills and coding efficiency.
- Ranked in the Top 70 in Codacharya, an annual coding contest among 500+ students at Techno International New Town, Kolkata.
- Certificate of Participation in the SIH 2025 Internal Hackathon (Sept 12–15, 2025) as a member of the Debug Demons team in the Hardware and Software category.
- Completed the Udemy certification "Build a Backend REST API with Node JS from Scratch" (12.5 hours), May 2024.
- Completed the Udemy certification "JavaScript Master Course From Beginner to Expert Developer" (6 hours), May 2025.
- Completed the Cursa certification "FastAPI for Beginners: Build a Production-Ready REST API."