Priyesh Kumar Jha

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Summary

Full-stack engineer and CS undergraduate with a strong foundation in **data structures, algorithms, and object-oriented design**, backed by hands-on experience building **scalable backend systems, real-time applications, and Generative/Agentic AI pipelines**. Proven ability to own projects end-to-end — architecture, implementation, and deployment — demonstrated through internships architecting high-concurrency, real-time platforms (**Node.js, LiveKit, LangGraph**) and applied ML systems validated in a production clinical setting. Comfortable diving deep into ambiguous problems, iterating quickly, and shipping reliable, well-tested solutions independently. Seeking an SDE-1 role to apply strong problem-solving and system design fundamentals to building and scaling customer-facing products.

Education

Vellore Institute of Technology, Chennai **2023 – 2027 (Expected)**
B.Tech – Computer Science and Engineering *CGPA: 9.16 / 10 — No Active Backlogs*

Technical Skills

Languages	C++, JavaScript, Python, Java, SQL
Backend	Node.js, Express.js, FastAPI, WebSockets, REST, Redis
Frontend	React, Next.js (App Router), Tailwind CSS, WebRTC, LiveKit
Databases	MongoDB, ChromaDB *(vector)*, MySQL, PostgreSQL
AI / Automation	LangChain, LangGraph, YOLOv8, RAG pipelines, LLM orchestration, Playwright
Deployment	Vercel, Render, Git, Linux
Security	OAuth 2.0, JWT, RBAC, RLS, secure API design

Experience

Software Engineer Intern **Dec 2025 – Feb 2026**
Spectov
- Architected an **AI Call Center platform** in **TypeScript/Node.js** using **LiveKit SFU** for real-time voice/chat rooms with a **multi-agent orchestration layer on LangGraph** — each agent maintaining independent business context and state, reducing average query resolution time by **40%**
- Designed end-to-end agent pipeline with **Express.js** REST endpoints, context isolation, tool-calling, and fault-tolerant state transitions across concurrent user sessions

Software Engineering & Applied ML Intern **Mar 2024 – Nov 2024**
Arignar Anna Memorial Cancer Hospital & Research Institute, Anna University *Kanchipuram, TN*
- Developed a real-time **YOLOv8-based organ recognition system** for laparoscopic procedures, detecting surgical instrument-organ interactions and streaming annotated video to theatre monitors, improving junior doctor procedural accuracy by **30%**
- Designed a **multi-protocol transmission pipeline** serializing inference outputs over **TCP/IP** for local delivery and **HTTPS** for secure remote broadcasting, achieving **sub-100ms end-to-end frame latency**
- Validated model with surgical staff via mAP and IoU metrics, achieving **87% mean average precision** through iterative clinical feedback loops

Projects

NixLearn – Study & Productivity Platform *(Next.js, TypeScript, Supabase Realtime)* Live | GitHub
- Implemented **event-sourced focus tracking** with append-only state reconstruction to guarantee zero time drift across concurrent sessions; served real-time analytics via **Supabase Realtime subscriptions**
- Architected **row-level security (RLS)** policies for multi-tenant data isolation with Google OAuth and email magic link auth; built memoized derived-state pipelines for O(1) dashboard renders

LetsVideoMeet – Real-Time Conferencing *(React, WebRTC, LiveKit SFU, WebSockets)* GitHub | Live
- Engineered **selective forwarding unit (SFU)** media routing via LiveKit supporting 20+ concurrent participants; implemented **ICE/STUN negotiation** and WebSocket signaling for sub-200ms peer connection establishment

FACS Emotion Recognition – Interpretable Computer Vision *(dlib, XGBoost)* GitHub
- Built an **interpretable** emotion recognition system grounded in Ekman's FACS Action Unit framework (not a black-box CNN): **hybrid CNN + AU-classifier** hit **65.4% on FER2013** vs 60.7% pure-CNN baseline after diagnosing and fixing a rectified-activation calibration artifact via feature-importance analysis

Agent_web – Autonomous Web Automation Agent *(Python, LangGraph, Playwright, ChromaDB, BrightData)* GitHub
- Engineered a goal-driven browsing agent using **LangGraph state machines** orchestrating **Playwright** browser tools, enabling autonomous multi-step task completion across arbitrary websites
- Built an **HTML-to-Markdown transformation pipeline** preserving interactive semantics (anchors, buttons, text inputs, radio, checkboxes) with **RAG-based chunking over ChromaDB**, allowing the agent to reason over pages exceeding LLM context windows
- Integrated **BrightData residential proxy layer** for CAPTCHA handling and rate-limit resilience; added **HLS/m3u8 stream extraction** for video-rich page automation

LetsChat – Distributed Messaging Platform *(Node.js, Redis, WebSockets)* GitHub
- Designed **publisher-subscriber message broker topology** for async service decoupling; implemented **token-bucket rate limiting** in Redis with hardened API boundary enforcement

Achievements & Certifications

- **MedHack Hackathon** – Led team to **2nd place** building an applied healthcare ML solution end-to-end under 24 hours
- **IBM Generative AI Professional Certificate** – Industry certification in generative AI, LLM application development, and prompt engineering