

# PRINCE KUMAR

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Mohali, Punjab, India

## Education

### CT University

Bachelor of Technology in Computer Science Engineering – CGPA: 8.25/10.0

Ludhiana, Punjab

2020 – 2024

### Technical Skills

**Languages & Frameworks:** JavaScript, TypeScript, Python, React 19, Next.js, React Native, Node.js, Express.js, Fastify  
**Frontend Technologies:** Redux, Zustand, Vite, Tailwind CSS, Material-UI, Bootstrap, Radix UI  
**Web3 Basics:** Web3.js, Ethers.js, Wallet Integration, MetaMask, Smart Contract Interaction  
**Backend & Databases:** MongoDB, PostgreSQL, Prisma, Redis, RabbitMQ, WebRTC, Socket.io, RESTful APIs  
**Cloud & DevOps:** AWS (EC2, ECS, S3, IAM, CloudWatch), Docker, Jenkins, CI/CD, Auto Scaling, Kubernetes  
**Tools & Practices:** Git, GitHub, Jira, Agile/Scrum, Linux, Version Control

## Professional Experience

3+ Years Experience

### Full Stack Developer (Team Lead)

Jun 2023 – Present

Sensation Software Solutions Pvt. Ltd.

Mohali, Punjab

- Led end-to-end development of **VenueMatch**, a multi-tenant B2B2C venue booking platform on **MERN stack** with **Socket.IO** real-time synchronization, automated proposal workflows, and **JWT-based RBAC** across customer, venue admin, and super-admin roles; scaled to **10,000+ bookings** and deployed on **AWS EC2 + Docker + S3**
- Architected the **College ERP (CERP)** frontend using **React 19** and **TypeScript**, delivering **17+ modules** with **1,300+ component files**; led and mentored a team of **6–8 developers**, defining architecture standards, component contracts, code review workflows, and performance benchmarks
- Built **AppyPay**, a production **digital payments platform**, with hands-on fintech experience in **merchant onboarding flows**, **KYC verification pipelines**, and **payment gateway integrations**; designed the merchant dashboard using **Material-UI** compound components and centralized **Redux Toolkit** state—reducing code duplication and onboarding time by **40%**
- Engineered **SensationCRM (LeadNest)** using **React 19**, **Vite**, and **TailwindCSS** with lead pipeline management, drag-and-drop form builder, RBAC, and **TanStack Table** powering **10,000+ records** with Excel/PDF export and fuzzy search
- Designed **TailUX**, a reusable design system on **TailwindCSS 4** adopted across multiple projects, cutting UI development time by **40%**; built an intelligent **Exam Seating Planner** with visual grid allocation, drag-and-drop assignment, and **PDF/Excel exports**
- Shipped **3 enterprise GSSC systems** (Accommodation, Vehicle, Complaint Management), reducing manual effort by **50%** and scheduling conflicts by **40%**; built analytics dashboards for **Supra.tools** using **Next.js + Chart.js**, cutting stakeholder analysis time by **40%**
- Integrated **Twilio Voice SDK** for in-app calling, **WhatsApp Business API** for customer messaging, and **Firebase Cloud Messaging** for push notifications; implemented **SignalR** live updates, **ApexCharts** dashboards, **i18n** localization, and **Sentry** error tracking—maintaining **99.9% uptime** across services
- Implemented platform-wide **RBAC**, **JWT authentication**, and secure API endpoints handling **50,000+ daily requests**; optimized performance with **Redis caching** and database indexing strategies adopted as team standards

### Software Engineer Intern

Jan 2023 – Jun 2023

Sensation Software Solutions Pvt. Ltd.

Mohali, Punjab

- Architected a large-scale **Order Lifecycle Management Engine** (2,600+ LOC) using a **state-machine pattern** with 15+ transitions, handling end-to-end workflows from order creation to delivery and completion, including automated transaction generation, outstanding balance computation, and full audit trail logging with user attribution
- Designed a multi-layered **RBAC and security framework** with **JWT authentication**, session token management, scoped data isolation, and granular authorization middleware (single, OR, AND, and role-based controls), along with force-logout, session cleanup, and IP/user-agent tracking for security auditing
- Built an advanced **analytics and reporting engine** (2,300+ LOC) using **MongoDB aggregation pipelines** to deliver performance dashboards, warehouse-wise insights, customer analytics, inactivity tracking, and automated **Excel exports**; developed interactive, filterable report UIs with drill-down capabilities and chart visualizations
- Developed a **multi-warehouse inventory and transit management system** with real-time stock tracking, inter-warehouse transfer workflows, driver assignment, audit trails for inventory mutations, and transactional consistency across orders, payments, and stock updates using **MongoDB transactions** with rollback mechanisms
- Delivered a production-grade **React 19 + TypeScript SPA** (50+ pages across 15 modules) with role-aware UI rendering, complex form validation, real-time updates via **WebSockets**, optimized search with debouncing (**60% fewer API calls**), intelligent cart aggregation with state persistence, dynamic **PDF generation** with digital signature capture and cloud storage, and **CDN-based media optimization** improving response time by **25–30%**

## Key Projects

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### AlgoForge Studios – Full-Stack EdTech Platform | *Next.js 15, TypeScript, MongoDB, AWS, Docker* [🔗 Live](#) | [📁 GitHub](#)

- Built a production-grade **EdTech platform** with **Next.js 15 API routes** as the backend, supporting **hybrid learning** (online + offline), course catalog with structured curriculum builder, video lectures, quizzes, assignments, grading engine, and **certificate generation**—serving **1,000+ students** with 99.5% uptime
- Implemented **JWT-based RBAC** (student, instructor, admin) with polymorphic **MongoDB** schemas; built student progress tracking, attendance management, discussion forums, announcement system, and real-time analytics dashboards for instructors
- Deployed on **AWS EC2** with **Docker** containerization; used **AWS S3** for video/document storage, **CloudFront** CDN for adaptive bitrate streaming, and **Cloudinary** for image optimization—achieving **60% reduction in server load** and sub-second media delivery
- Integrated **Razorpay/Stripe** payment gateway for course purchases and subscriptions, email notifications via **Nodemailer**, and built an SEO-optimized public landing with server-side rendering and dynamic OG tags

### WorkSphere Live (Web + Mobile) | *React 19, React Native, WebRTC, Socket.io*

- Built full-stack real-time virtual co-working platform with **P2P video/audio via WebRTC**, screen sharing, collaborative whiteboard, and chat supporting concurrent sessions with tiered permissions (guest/free/premium)
- Implemented custom **Socket.io signaling server** and complete **WebRTC flow** (offer/answer/ICE candidates) using STUN servers; utilized **RTCTrpSender.replaceTrack** for seamless screen-share toggling without peer renegotiation
- Developed cross-platform experience with **React Native mobile app** and responsive web client; designed VideoGrid component with pinning, spotlight mode, and productivity tools (Pomodoro timers, todos, ambient sounds)
- [🔗 Live Web](#) | [📁 GitHub](#)

### DrawIO – Collaborative Whiteboard | *Next.js 14, TypeScript, ConvexDB, React Flow* [🔗 Live](#) | [📁 GitHub](#)

- Built real-time collaborative infinite canvas with **ConvexDB** for instant synchronization, **CRDT-based conflict resolution**, live cursor tracking, and efficient viewport culling for rendering **1,000+ elements**
- Implemented drawing tools (pen, shapes, text), layer management, undo/redo with command pattern, and multi-user presence indicators supporting **50+ concurrent collaborators**

### ErgoSmart – AI Posture Coach | *React 18, TensorFlow.js, MediaPipe BlazePose, WebGL* [🔗 Live](#) | [📁 GitHub](#)

- Built client-side AI posture correction app using **TensorFlow.js** and **MediaPipe BlazePose** achieving **30fps real-time inference** with 33-point body landmark detection and zero backend dependency
- Implemented WebGL acceleration, angle calculation algorithms for posture analysis, and real-time feedback system with audio/visual alerts improving user posture by **35%** in usability testing

### VitalWatch – AI Exercise Correction Platform | *React, TensorFlow.js, Pose Estimation* [📁 GitHub](#)

- Built **VitalWatch** AI-powered exercise correction platform using **TensorFlow.js** with real-time **pose estimation** and skeletal tracking, achieving **100ms inference latency** for instant form feedback with admin interface for exercise configuration

## DevOps & Cloud Expertise

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### AWS Cloud Fundamentals & Infrastructure [📁 GitHub](#)

- Deployed **Node.js microservices** on **AWS ECS (Fargate)** with containerized workloads; built **Docker images**, pushed to **Amazon ECR**, and configured ECS task definitions with health checks, service discovery, and rolling deployments
- Built end-to-end **CI/CD pipelines with Jenkins** for automated testing, building, and deployment to **AWS EC2** and ECS environments; configured **Auto Scaling Groups (ASG)** to handle traffic spikes, improving availability and reducing infrastructure costs
- Implemented **AWS IAM** roles and policies enforcing least-privilege access for service-to-service communication; set up **Amazon CloudWatch** for centralized logging, metrics, and alerting across ECS tasks and EC2 instances
- Containerized multi-environment applications with **Docker** and **Docker Compose**; managed static assets and backups on **Amazon S3**; applied **Kubernetes** concepts (Pods, Deployments, Services) for container orchestration in staging environments