

# Chris Kang

Product-Focused Full Stack Engineer | React / TypeScript / Node.js / Java

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## Summary

**AI-Driven Velocity & Iteration:** Leverages a mature, AI-driven workflow to accelerate the entire product lifecycle—pivoting from ideation and high-fidelity prototyping to scalable architecture and MVP implementation. Consistently reduces development and refactoring cycles by ~40% while maintaining strict type safety and system robustness.

**Recent Independent & Open-source Contributions:** Actively building in the open-source community; engineered and launched a Christmas-themed project from scratch in under 5 hours, garnering 50+ GitHub Stars; designed an AI transcription pipeline based on Faster-Whisper, utilizing SSE streaming and ETag-based sync to reduce API quota consumption by 80%.

**Product Ownership & Proven Impact:** Over 6 years of cross-industry product experience (Inspur Group), leading systems that achieved 20% annual energy savings and a 50% reduction in security incidents; excels at "converting operational chaos into clean, automated software". Engineered reactive architectures (Java WebFlux + Netty) supporting 10,000+ concurrent devices and millions of real-time events, reducing onboarding costs by 80%. Passionate about building automation at scale, solving problems with pragmatic, creative, and elegant engineering.

## Experience

### Indie Product Full Stack Engineer

Founder

May 2025 – Present

- **Full-Cycle Product Ownership:** Engineered and launched a suite of open-source products from 0 to 1, from product design and architecture to implementation, leveraging AI tools to accelerate development velocity.
- **Scalable SaaS Architecture:** Developed a YouTube Analysis Platform utilizing Node.js and Python FastAPI, implementing Server-Sent Events (SSE) for real-time video transcription and analytics streaming.
- **AI Workflow Automation:** Built a privacy-first Chrome Extension leveraging Faster-Whisper for local-first AI inference; architected a Native Messaging bridge between the browser UI and system-level Python services.
- **Complex State Management:** Leveraged Zustand and React to build highly interactive, state-heavy tools (GitHub README Studio), optimizing for sub-second interaction latency and strict TypeScript type-safety.
- **Autonomous Infrastructure:** Designed and automated multi-service deployment pipelines using Docker and GitHub Actions, maintaining a high-frequency shipping cadence in a remote-first environment.

### Full-Stack Engineer & Product Lead

Inspur Group

Jul 2019 – May 2025

- **Scalable Automation Architecture:** Engineered an enterprise-grade Industrial IoT SaaS platform from scratch, architecting a reactive backend with Java WebFlux and Netty to handle 10,000+ concurrent devices and millions of real-time events, focusing on building automation at scale.
- **Protocol Abstraction & Integration:** Designed a Universal Protocol Adapter that consolidated 30+ heterogeneous industrial protocols into a unified API layer, reducing device onboarding costs by 80% and transforming "operational chaos" into structured data.
- **Real-World Impact & Optimization:** Led the development of smart building systems that achieved 20% annual energy savings and a 50% reduction in security incidents through AI-powered automated response workflows.
- **Cross-Functional Leadership:** Managed 10-person agile teams as both a Lead Developer and Product Manager, bridging the gap between complex technical requirements and user-centric product goals.
- **Cloud-Native DevOps:** Established a robust CI/CD infrastructure using Jenkins and K3s (Kubernetes), ensuring stable deployment of 10+ major versions in high-pressure, mission-critical environments.
- **Polyglot Data Strategy:** Orchestrated a sophisticated data layer combining PostgreSQL, InfluxDB, and Elasticsearch to provide sub-second latency for real-time monitoring and high-fidelity historical analytics.

## Skills

### Frontend Ecosystem

React, TypeScript, JavaScript, Next.js, Tailwind CSS, shadcn/ui, Uni-App, React Native

### Backend & Data Architecture

Node.js(Express/Nest.js), Python (FastAPI), Java(Spring Boot/Cloud/WebFlux), PostgreSQL, Redis, InfluxDB, Elasticsearch, Oracle, MySQL, SQLite, Kafka, RabbitMQ, MQTT

### Infrastructure & Automation

AWS Lambda, Amazon S3, Serverless Architecture, OAuth 2.0, HMAC, Docker, GitHub Actions (CI/CD), K3s, Jenkins, Linux, Server-Sent Events (SSE), WebSocket

### AI-Assisted Development & Design

Claude Code, Cursor, CodeX, Gemini, Antigravity, Canvas, Axure RP, draw.io

## Languages

### Chinese

Native proficiency

### English

Professional working proficiency (technical communication & documentation)

## Projects

### YouTube Analysis Platform

Creator-focused YouTube analytics product combining AI transcription and growth tracking, developed as full-stack system with React, Node.js/Express, and FastAPI

- **Event-Driven Real-Time Architecture:** Engineered a high-fidelity analytics dashboard using React and Node.js, implementing an innovative dual SSE streams architecture (task progress + notification push) to deliver millisecond-level real-time feedback for long-running AI transcription workflows.
- **Automated Transcription Pipeline:** Integrated Faster-Whisper models (supporting 5 variants from tiny to large) via Python FastAPI to automate a 5-stage processing pipeline: video download → audio extraction → AI inference → cloud storage, with granular progress tracking at each stage.
- **Multi-Source Data Aggregation & Sync:** Unified YouTube Data API v3 and Analytics API v2 into a cohesive analytics layer; implemented ETag-based incremental synchronization with automated midnight UTC cron jobs to efficiently refresh channel data across PostgreSQL and MinIO storage.
- **Production-Grade Container Orchestration:** Leveraged Docker Compose to orchestrate a multi-service architecture (React + Node.js + FastAPI + PostgreSQL + MinIO), ensuring 100% dev/prod parity and enabling high-velocity iteration cycles.

<https://github.com/kangchainx/youtube-analysis-project>

### Video Text Chrome Extension

Privacy-first video transcription tool enabling unlimited local AI processing for creators, built as full-stack Chrome extension with React, Python/FastAPI, and Faster-Whisper

- **Cross-System Integration Architecture:** Engineered a production-grade, 3-layer communication architecture using Chrome Native Messaging, connecting React Side Panel UI with native Python FastAPI backend, successfully overcoming browser sandbox limitations for heavy AI computation workloads.
- **Privacy-First AI Transcription:** Deeply integrated Faster-Whisper (supporting 5 model sizes from tiny to large) with SQLite task queue, achieving low-latency, high-fidelity speech transcription on local hardware while ensuring 100% data privacy and leveraging local hardware acceleration.
- **Cross-Platform Audio Processing Engine:** Designed an audio extraction pipeline based on yt-dlp, supporting multi-platform content including YouTube and Bilibili, implementing intelligent format conversion and audio preprocessing to provide high-quality input for AI transcription.
- **Real-Time Progress Streaming:** Implemented Server-Sent Events (SSE) for millisecond-level task progress updates from Python backend to browser UI, coupled with sophisticated Service Worker-based message routing for smooth real-time feedback.
- **Multi-Platform Automated Distribution:** Established a fully automated CI/CD delivery pipeline using GitHub Actions, supporting professional-grade packaging and distribution for macOS (shell/dmg) and Windows (.exe) platforms, with on-demand service startup and idle auto-shutdown lifecycle management.
- **Internationalization & Localization:** Built-in OpenCC for Traditional ↔ Simplified Chinese conversion, integrated i18next for multi-language interface support, providing native language experiences for global users.

<https://github.com/kangchainx/video-text-chrome-extension>

### Industrial IoT Platform

Apr 2023 – May 2025

Enterprise Web Platform for Device Connectivity & Monitoring

- **Event-Driven Microservices Architecture:** Architected a distributed, event-driven IoT platform using Java WebFlux and Netty, processing 5M+ telemetry events daily across 8+ loosely-coupled microservices. Implemented pub-sub messaging patterns with Kafka and MQTT to decouple device ingestion from processing pipelines, enabling horizontal scaling to 10,000+ concurrent device connections with zero downtime deployments.
- **Smart Campus Integration & Building Automation:** Led a flagship smart campus deployment as the primary use case for the IoT platform, integrating 20+ heterogeneous subsystems including smart lighting, parking management, security surveillance, HVAC, water supply/drainage, and access control into a unified automation layer. Implemented rule-based workflow orchestration and AI-powered video analytics (camera-based anomaly detection, real-time event alerting) that achieved 20% annual energy savings and a 50% reduction in security incidents across the campus, demonstrating end-to-end automation at scale.
- **Distributed Service Mesh & Protocol Integration:** Built a microservices-based integration hub orchestrating 30+ heterogeneous industrial protocols (Modbus, BACnet, OPC UA, MQTT) through RESTful APIs and message queues. Implemented circuit breaker patterns (Resilience4j) and distributed tracing (OpenTelemetry) to maintain 99.9% uptime even during partial system failures, reducing device onboarding costs by 80%.
- **Polyglot Distributed Data Architecture:** Orchestrated a distributed data layer combining PostgreSQL (metadata/configuration), InfluxDB (time-series telemetry), and Elasticsearch (logs/search), implementing eventual consistency patterns and Redis-based distributed caching. Designed partition strategies handling 5TB+ telemetry data with sub-100ms query latency, ensuring data availability across geographically distributed edge nodes.
- **Cloud-Native Microservices Infrastructure:** Established a Kubernetes-native (K3s) deployment architecture with Jenkins CI/CD pipelines, implementing service discovery, health checks, and automated rolling updates for 8+ microservices. Deployed lightweight edge services on K3s edge clusters for local processing during network disruptions, enabling autonomous operation and reducing cloud bandwidth costs by 60%.

## Education

B.Eng. Software Engineering, Taiyuan University of Technology (2015–2019)