

Peng Zhang

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SUMMARY

Backend engineer with 6 years of experience building low-latency, high-throughput distributed systems at scale. Specialized in real-time data pipelines, API platform architecture, and performance optimization serving 100M+ users across Amazon Music, Meta AI infrastructure, and Adobe Experience Platform.

PROFESSIONAL EXPERIENCE

Adobe | San Jose, CA

Backend Software Development Engineer | Sept 2023 – Present

- **Public API Platform:** Designed and shipped a unified API aggregation layer consolidating 100+ microservice calls into single endpoints; reduced client integration complexity from weeks to days, now adopted by PayPal and 100+ enterprise customers.
- **AI Agent Infrastructure (MCP):** Built a real-time context retrieval system enabling AI agents to query journey data and deploy configurations via natural language; cut customer ticket resolution time from 3 days to 1 day, reducing engineering effort per ticket from 1.5 hours to 5 minutes.
- **Pipeline Isolation Architecture:** Eliminated multi-tenant pipeline blocking caused by slow external API calls; designed a dual-pipeline system with dynamic rerouting based on real-time latency metrics, reducing weekly production alerts from 3 to 0.
- **Real-time Audience Sync:** Engineered a synchronized snapshot system ensuring data freshness for scheduled campaign runs; adopted by 100+ customers across 800+ journeys within 3 months, improving ad targeting precision for 100M+ user profiles.

Meta Platforms Inc. | Menlo Park, CA

Backend Software Development Engineer | Apr 2022 – June 2023

- **AI Infrastructure (C++/Rust):** Developed core infrastructure services for Meta's global ML training and inference fleet, including GPU-to-memory connection optimization (C++) and automated host/resource allocation for training workloads (Rust).
- **Accelerator Enablement:** Owned GPU driver lifecycle management and custom accelerator enablement across Meta's AI compute infrastructure, directly supporting large-scale model training and inference workloads.
- **Infrastructure Automation:** Delivered kernel-level configuration management and boot-time dependency orchestration, enabling consistent provisioning across Meta's data centers.

Amazon.com Inc. | Santa Clara, CA

Backend Software Development Engineer | Aug 2019 – Mar 2022

- **FairPlay DRM (Tech Lead):** Independently architected end-to-end DRM service for all Apple/Safari platforms; reduced P95 latency from 130ms to 35ms (73% improvement). Coordinated 5+ teams across client, backend, and infrastructure orgs.
- **Alexa Music DRM:** Core contributor to DRM integration for Amazon Music on Alexa devices; collaborated with Alexa Device, Alexa Skills, and downstream teams to enable secure playback across the entire Alexa ecosystem.
- **Streaming Platform & Concurrency Enforcement:** Built distributed infrastructure handling 80K TPS sustained, 140K TPS peak; designed real-time session management system using DynamoDB, API Gateway, and ECS to enforce licensing restrictions.
- **Engineering Leadership:** Mentored 3 engineers with full onboarding ownership; mentees shipped FairPlay integration and Concurrency Service enhancements.

TECHNICAL SKILLS

- **Languages:** Java, C++, Rust, Python, Node.js, SQL
- **Distributed Systems:** Low-latency API design, Real-time data pipelines, Multi-tenant architecture, Event-driven systems
- **Cloud & Infrastructure:** AWS (Lambda, API Gateway, S3, CloudFront, Route53), Kubernetes, Docker, Apache Kafka
- **Databases & Observability:** MySQL, MongoDB, Aerospike, Prometheus, Cortex, Distributed Tracing
- **Certifications:** AWS Cloud Practitioner

EDUCATION

University of Southern California | Los Angeles, CA

Master of Science in Computer Science | Dec 2018 | GPA: 3.5/4.0

Beijing University of Posts and Telecommunications | Beijing, China

Bachelor of Engineering in Internet of Things | July 2016 | GPA: 3.5/4.0