

Ryan Ma

Senior Software Engineer

SUMMARY

- Full Stack Software Engineer with expertise in Node.js, Python, Go, React, and TypeScript, delivering scalable distributed systems and high-throughput APIs for millions of users.
- Proven experience designing event-driven architectures using Kafka, Redis, and microservices to optimize performance and reliability in large-scale platforms.
- Skilled in cloud-native development on AWS (EKS, Lambda, DynamoDB) with CI/CD pipelines, infrastructure as code, and observability tools like OpenTelemetry and Prometheus.

TECHNICAL SKILLS

Main Technical Skills	Node.js (3 yr.), Python (5 yr.), React (4 yr.), TypeScript (3 yr.)
Programming Languages	Python (5 yr.), TypeScript (3 yr.)
Java Frameworks	Apache Spark
Scala Frameworks	Apache Spark
JavaScript Frameworks	Express, Next.js, Node.js (3 yr.), React (4 yr.)
Python Frameworks	FastAPI
Python Libraries and Tools	pytest
JavaScript Libraries and Tools	React Native, React Query, Redux-toolkit, Webpack
Data Analysis and Visualization Technologies	Apache Spark, ETL Pipelines, Kibana
Security	Compliance Policies
Databases & Management Systems / ORM	Apache Spark, AWS DynamoDB (4 yr.), Elasticsearch, ELK stack (Elasticsearch, Logstash, Kibana), MongoDB, MySQL (1 yr.), PostgreSQL, Redis (3 yr.)
UI Frameworks, Libraries, and Browsers	Ant Design
Cloud Platforms, Services & Computing	AWS (4 yr.)
Amazon Web Services	AWS Aurora, AWS CodePipeline, AWS DynamoDB (4 yr.)
Methodologies, Paradigms and Patterns	Agile, Distributed systems, Observer, Scrum, Solution Architecture Design, System Design, TDD

Scripting and Command Line Interfaces	Bash
Deployment, CI/CD & Administration	CI/CD, GitLab CI, Jenkins
QA, Test Automation, Security	Cypress, Integration testing, Jest, pytest
Virtualization, Containers and Orchestration	Docker, Kubernetes, Terraform
SDK / API and Integrations	FastAPI, GraphQL, OpenTelemetry
Logging and Monitoring	Grafana, Logstash, Prometheus
Mail / Network Protocols / Data transfer	GRPC
Message/Queue/Task Brokers	Kafka (3 yr.), RabbitMQ
Operating Systems	Linux
Project Management & Administration	Technical Documentation
Other Technical Skills	Data Structures, Public Relations, Unreal Engine

WORK EXPERIENCE

Software Engineer - Instagram (Instagram Graph API and Messaging Platform Enhancements)

Duration: 10/2025 – 04/2026

Summary:

- Enhanced Instagram's Graph API v21 and Messaging Platform to improve media metadata richness, conversation-state signals, moderation capabilities, and real-time event processing
- The project aimed to support millions of daily business account calls and improve integration reliability for enterprise clients

Responsibilities:

- Engineered high-throughput API enhancements and implemented Redis-based caching with Kafka-driven invalidation.
- Designed propagation of DM thread relationship metadata through Kafka event streaming.
- Developed moderation API endpoints supporting conversation blocking and automated spam routing.
- Led backend migration from Instagram Basic Display API to Graph API with telemetry instrumentation.
- Implemented structured webhook confirmation events and asynchronous webhook payload enrichment.



- Extended media publishing pipeline to support generative content types and multi-asset carousel publishing.
- Designed integrity status API and webhook system for real-time policy enforcement states.
- Contributed to notification ranking infrastructure and architected distributed cache strategies for conversation ownership routing.
- Developed programmatic reaction management APIs and contributed to real-time voice communication API launch.

Technologies: Node.js 20, TypeScript, MySQL 8, Redis 7, Kafka, internal Reels and Feed ingestion event systems

Software Engineer - Amazon (Real-Time Ad Serving Infrastructure and Campaign Management)

Duration: 08/2022 - 09/2025

Summary: Developed a large-scale real-time advertising platform for in-store digital displays, including ad serving infrastructure, campaign targeting, budget pacing, policy enforcement, analytics, and advertiser management interfaces to improve delivery reliability and advertiser satisfaction.

Responsibilities:

- Architected real-time ad serving infrastructure transitioning to push-based scheduling.
- Designed signed creative manifest generation service with HMAC validation.
- Built distributed campaign targeting evaluation and dynamic budget pacing algorithms.
- Developed advertiser campaign management interfaces with React and Node.js.
- Created automated policy enforcement system integrating metadata validation and image analysis.
- Engineered analytics event ingestion pipeline and pre-aggregated time-series data models.
- Developed advertiser performance dashboards and attribution processing services.
- Integrated asset delivery infrastructure using AWS CloudFront and S3.
- Collaborated with cross-functional teams using Agile methodologies and contributed to CI/CD pipelines.

Technologies: Python 3.10, AWS ECS, DynamoDB, Redis, React 18, Node.js, AWS S3, AWS CloudFront, AWS Kinesis, RDS

Software Engineer - TikTok (Developer Platform Portal and Authentication Infrastructure)

Duration: 07/2020 – 08/2022

Summary: Re-architected TikTok's developer platform portal and backend authentication infrastructure to provide scalable app management, OAuth flows, webhook management, content upload, policy validation, and analytics dashboards for thousands of third-party developers.

Responsibilities:

- Re-architected developer portal using React 17 and TypeScript.
- Developed OAuth authorization flow simulator and backend token lifecycle management.



- Built content upload management interface with chunked uploads and retry mechanisms.
- Implemented policy-aware metadata validation and comprehensive webhook management interface.
- Improved webhook reliability with exponential backoff and dead-letter queue mechanisms.
- Developed sandbox testing infrastructure for webhook event simulation.
- Built analytics API integration layers and configurable analytics dashboards.
- Contributed to guided developer onboarding workflow with analytics instrumentation.

Technologies: React 17, TypeScript, Go 1.18, Python, Kafka, Node.js

EDUCATION

- **University of Michigan**
Bachelor of Computer Science and Software Engineering
Aug 2016 – May 2020

