

AYAN MAO

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About Me

Software Engineer with **2.5 years of experience** focusing on **large-scale advertising systems**, including retrieval, ranking and auction pipelines.

Maintain **99.95% availability at hundreds of thousands QPS**, lead cross-services migrations enabling next-generation ranking capabilities, and **integrate LLM(Grok) signals into ads** retrieval and auction pipelines at X/xAI.

Experience

X/xAI

Feb. 2024 – Present

Software Engineer II @ Ads Team | Java, Scala, Python

Palo Alto, CA

- Owned core ads-serving services operating at hundreds of thousands QPS (tens of billions of requests per day) scale, maintaining 99.95% availability and ensuring SLA-compliant, low-latency serving across all ad products as **one of three primary on-call engineers**
- Led two junior engineers to deprecate the legacy ads ranking service, enabling the launch of the next-generation ranking architecture and eliminating legacy code debt, resulting in an **80ms+ (p95) end-to-end latency reduction** and website conversion gains
- Integrated Google(AdMob) demand into X's ad serving stack with iOS & Android engineers to monetize inventory and improve fill, optimizing the pipeline and scaling traffic, resulting in **annual revenue growth from xM to xxxM within 5 months**
- Owned all Takeover Ads surfaces (Promoted Trend, Spotlight, First View Timeline & Video), ensuring delivery quality, reliability, and feature development which generates hundreds of millions annual revenue from premium advertisers
- Shipped **Grok-based retrieval** for ad selection, improving **DPA (Dynamic Product Ads)** performance and user-ad matching quality; Grok retrieval became one of the highest-performing retrieval sources in the ads system
- Improved ad fatigue logic and diversity, **increasing CTR by 1.3%** and boosting user active seconds by 0.12%

Internships

Google

Aug. 2022 – Nov. 2022

Software Engineering Intern @ Ads Mobile Team | Java, Lua, GCP

Mountain View, CA

- Delivered a complete **Metaverse Ads** prototype, including a Lua SDK for serving ads in 3D virtual environments (e.g., Roblox), which later became a formal project for multiple full-time engineers

Meta

May 2022 – July 2022

Software Engineering Intern @ Ads Infra Team | C++, Python

Menlo Park, CA

- Enhanced ads testing infrastructure(canaries) by **automating A/B test execution** across test and prod environments, generating commit-level performance diagnostics and improving debugging efficiency

Microsoft Research Asia

Oct. 2020 – June 2021

Research Intern @ System Research Group | Python, TypeScript

Beijing, China

- Contributed new parameter auto-tuners to NNI (Neural Network Intelligence, 13.2k stars AutoML toolkit), increasing downstream search effectiveness

Technical Skills

Languages: Java, Python, Scala, C++, Rust, Lua, TypeScript

Backend & Tools: Distributed Systems, Microservices, Real-time Ads Serving, High-throughput APIs, MySQL, Hadoop

Applied AI & Platform: LLM Integration, Model Serving, AWS/GCP, Docker/Kubernetes

Education

Northeastern University

2021 – 2023

Master of Science in Computer Science

Seattle, WA

Zhejiang University

2017 – 2021

Bachelor of Engineering in Computer Science

Hangzhou, China