David Zhang

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Software engineer with 6+ years of experience building scalable systems and APIs across web, augmented reality and e-commerce domains. Passionate about leveraging AI to enhance developer workflows, productivity and real-world product experiences!

Languages	Python, Java, Kotlin, Typescript/NodeJS, HCL, Swift, Objective-C, Scala, C++
Technologies	Google Cloud, AWS, gRPC/Protobuf, Cloudflare, Fastly, Flask, GraphQL, Temporal, Airflow, Android, React Native, Docker, Gradle, Bazel
Databases	Cloud Spanner, MySQL, PostgreSQL, MongoDB, Redis
Dev Tools	Git, Intellij, Terraform, Xcode, Android Studio, VS Code, Cursor

EDUCATION

University of Waterloo
Bachelor of Software Engineering (Dean's Honors List with Distinction)

Sep 2013 - Apr 2018

WORK EXPERIENCE

Software Engineer, Web Infra @ Cash App (Block Inc)
Seattle WA

Mar 2023 - Present

- Build and deploy anti-request forgery verification and uniqueness enforcement at the CDN layer that is applied on **all 5B+ daily web and mobile API requests**
- Integrate instructions and guidelines for **Goose, Block's AI agent**, into development workflows and explore creative applications of it as part of hackathons and tech talks
- Design, implement and synchronize various rate limiting, caching, web application firewall rules and worker logic across content delivery network (CDN) providers for Cash domains to protect web customers and platforms against inauthentic activities
- Maintain new and existing core web service features, **experimentation, real-time monitoring** and downtime fallback experience mechanisms
- Migrate web service business logic between monolith and microservices and between open source server frameworks and languages (Jakarta to Misk)
- Organize and host regular web summit and tech talk events to facilitate knowledge sharing and cross-functional collaborations within the Cash web organization

Software Engineer, Catalog @ Scale AI
Seattle WA

Nov 2022 - Mar 2023

- Combined **OCR** (optical character recognition) ML models and **OpenAI GPT-3 prompt engineering** to provide enhanced attribute extraction capabilities via real-time LLM-backed APIs using image and text from catalog products
- Integrated and iterated with ML team to fine-tune and improve reliability of image-text bimodal models for classifying product taxonomy
- Advocated for and architected Temporal-based solutions intended to replace existing catalog data extraction workflows and significantly improve pipeline reliability

Software Engineer, Spectacles AR @ Snap Inc
Seattle WA

Sep 2021 - Nov 2022

- Created and iterated on experimental and foundational augmented-reality lenses that integrate **ML-based hand-tracking capabilities** and provided feedback for improving accuracy
- Architected and built metrics framework to improve observability of lens usages and performance
- Integrated Maven/Bazel into in-house OS-agnostic IPC framework for use in Android services
- Added build integration pipeline to improve development efficiency for lens updates on firmware
- Explored new capabilities and expanded Snap's intellectual properties via the following patents
    - AR-based virtual keyboard (SLW#4218.F40US1 /// Snap# P02228-US1)
    - Gesture-based keyboard text entry (SLE#4218.F39US1 /// Snap# P02227-US1)
    - Hand-tracked text selection and modification (SLW# P02237-US1 /// Snap# 4218.F59US1)
    - Mixed reality media content (SLW# 4218.H91US1 /// P02493-US1)
    - Near-field communication for pairing wearable devices (SLW#4218.J47US1 /// P02677-US1)
    - Waterproof UAV for capturing images (ANON-440US1 /// P02471-US1)

Software Engineer, Catalog @ Snap Inc
Seattle WA

Aug 2018 - Sep 2021

- One of the founding engineers for building PCS (product catalog service), overseeing a scalable advertiser-facing API platform and various data pipelines to support Snap's dynamic product ad (DPA) and AR/commerce shopping experience offerings
- Integrated Pub-sub solution with **Ads integrity ML pipeline** to intelligently review millions of products simultaneously at scale
- Leveraged Dataflow and Airflow to build metadata export pipeline between BigTable & BigQuery, built relevant Looker visualizations off of BigQuery for DPA top-level metrics
- Built generic job workflow framework that powers set categorization of products and items of other verticals, processing millions of items simultaneously
- Implemented GraphQL API that fronts all requests from advertiser-facing Business Manager and Ads Manager to the backend service via async gRPC client, reducing load time of Business Manager for large advertisers by up to 96%
- Designed and built generic reporting framework and APIs to facilitate self-diagnosis of catalog issues for advertisers, reducing customer support requests by 50% HoH

OTHER EXPERIENCES

Mentor, Cash App
Seattle WA

Mar 2023 - Present

Mentor, Engineering Academy @ Snap Inc
Seattle WA

Apr 2022 - Aug 2022

Mentor, St. Joseph Center Codetalk
Seattle WA

Nov 2020 - Jul 2022