

Ashwanth Fernando

Principal Software Engineer

Distributed Systems | Backend Engineering | AWS and GCP
Microservices | Product Focused and Customer First Mindset

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Summary

Hands-on principal-level engineer with 15+ years building large-scale distributed systems and platform infrastructure at Apple, Canva, eBay, Atlassian, and Walmart. Scaled Canva Search from 20M to 80M MAU and built the team behind 8 live-collaboration products now used by 10M+ MAU; architected 99.9%-availability global load balancers at Apple; drove Walmart's migration from a proprietary commerce platform to open source, saving \$100M+ annually. Author of 5 US patents. Expert in building distributed systems on the cloud; currently shipping production agentic AI systems (LangGraph, RAG, LLM guardrails).

Technical Skills

Languages & Databases: Java (primary), Go, Python, Kotlin, Scala · MySQL, DynamoDB, Spanner, Redis, Elasticsearch, Solr

Cloud & Infrastructure: AWS, GCP, Kubernetes, Terraform, Docker, Spinnaker · Kafka, Spark, ZooKeeper, Temporal

Frameworks & AI: Spring, GraphQL, gRPC, Protobuf · LLMs, RAG, LangGraph, agentic workflows

Experience

Founder / Principal Engineer, Tentacle Software

Jan 2022 - Present

Boutique engineering consultancy for high-throughput, low-latency platforms.

Client: Macquarie Bank

Feb 2025 - Present

- Built agent skills that introspect a legacy web app used by millions of users and generate parallelized end-to-end tests across environments, validating UI results against database state; the regression harness for the modernization below.
- Using multi-agent workflows backed by that test harness, upgraded a large legacy codebase to current versions and remediated its security vulnerabilities: a program scoped at roughly **two years, completed in six weeks**.
- Led a latency program across 5 teams (20+ microservices) on the Wealth Adviser Platform, fixing caching strategy, reactive processing, schema flaws, and JVM GC settings. **p95 down 14%, p99 down 9%, throughput up 3.5x**.
- Exposed mortgage serviceability services as agent tools and tuned prompts across workflows; patterns adopted by downstream squads.

Client: WEX

Oct 2023 - Jun 2024

- Built streaming analytics on **Spark Structured Streaming** processing **1.2M+ daily events** for real-time hotel booking metrics, and modernized the Kafka to Spark to BigQuery pipeline with CDC and exactly-once delivery across 40+ partner integrations.

Client: Atlassian

Feb 2022 - Jul 2023

- Designed and led the development of consistent-hashing load balancer initially for insta-switch active-passive elastic search routing, then for active-active Elasticsearch, increasing **Confluence search availability +7% globally**.
- Partnered with deployment engineering teams to architect insta-deploy to all regions from main branch, cutting **deploy lead time from 1 week to 10 hours**.

Founding Engineer, Packsmith

Jul 2024 - Nov 2024

Packsmith is an AI-driven distribution platform specializing in last mile logistics for e-commerce brands.

Full-time founding role taken during a pause in consulting work.

- Led end-to-end technical strategy for the distributed reverse logistics platform, partnering with founders and PMs on architecture and milestones.
- Built a priority/VIP tagging system for Shopify feeds and Temporal workflows for shipment stage progression, improving shipping times for priority orders.

Engineering Manager / Staff Engineer, Canva, Sydney, Australia

Nov 2018 - Jan 2022

- Kept Canva Search fast and reliable while **MAU grew 4x, from 20M to 80M**: decomposed the monolithic ingestion pipeline into microservices, moved non-queryable fields out of Solr into MySQL to shrink the index footprint, and tuned cache invalidation and JVM GC to hold p95 latency flat through the growth.
- Shipped autocorrection, query suggestions, and trending search end-to-end.
- Built a 6-engineer team from scratch and shipped 8 live-collaboration products in under 2 years, including Canva Live (real-time audience interaction at presentation scale, built on reactive microservices); products now used by **10M+ MAU**. The work produced 3 US patents. Owned hiring, 1-1s, and performance reviews while staying hands-on in architecture and code.

Senior Staff Engineer, eBay, San Jose, California

Nov 2014 - Aug 2018

- Headed design of the dynamic configuration system and page assembler for eBay's core search results page, so business teams could reconfigure search UI and run experiments without waiting on release cycles.
- Built the SDK behind eBay ShopBot's multi-turn dialogs (carousels, media, clarifying questions) with Facebook Messenger and Google Assistant integrations; new conversation flows shipped through config in minutes rather than code deploys.
- Created [Regressr](#), an open-source tool that catches regressions between service versions before release; released under the eBay GitHub org and adopted by multiple departments.

Principal Engineer (ICT 5), Apple, Cupertino, California

Sep 2013 - Oct 2014

- Led architecture and code for core pieces of a globally distributed load balancer powering device activations across the US, Canada, and Europe, held to a **99.9% availability** SLO: the health service tracking liveness of each load balancer instance, service discovery, and the metrics pipeline capturing operational telemetry from the fleet.
- Joined after the departure of the system's principal engineer; took over a partially built platform and delivered the remaining components with a team of 12, running standups and leading design reviews.

Staff Software Engineer, Walmart, San Bruno, California

Oct 2010 - Sep 2013

- Architect and tech lead for automatic sitemap generation and request redirection for Walmart Canada's SEO efforts; also built the base-variant display system for managing SKUs with size variants.
- Hand-picked for the @Platform team, where I built a config management system adopted by 200+ microservices, a CRUD API generator that wraps a database and serves APIs with minimal hand coding, and parallel deployment orchestration for fleets of 10+ nodes.

Earlier roles: Software Engineer at Best Buy (2005–2009), Pearson VUE (2009–2010), and Walgreens (2010).

Patents, Open Source & Writing

- **5 US patents:** 3 in live collaboration and interactive presentations from my Canva work ([US 2023/0205552](#), [US 2023/0205808](#), [US 2023/0076902](#)); 2 in PaaS deployment infrastructure from my Walmart platform work ([US 9,342,369](#), [US 2014/0109082](#))
- **Engineering writing:** [Building a Data-Driven Autocorrection System](#) (Canva Engineering Blog) · [Lessons Learnt Building Reactive Microservices for Canva Live](#) (Canva/Medium) · [Introducing Regressr](#) (eBay Tech Blog)

Education

Master of Computer Applications, Anna University · Bachelor of Computer Applications, Madras University