Ashwanth Fernando

Principal Engineer

Distributed Systems | Backend Engineering | AWS and GCP

Microservices | Product Focused and Customer First

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Australian Citizen

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Summary

- Hands-on principal-level engineer/architect with **15+ years** building, scaling **distributed systems** and teams at **Apple**, **Canva**, **eBay**, **Atlassian** and **Walmart** driving reliability, performance, and business impact for multi-million-user products.
- **Platform Engineering at scale:** Built core platform systems at **Walmart** (Fortune 1) for config management, auto-generated CRUD APIs, and parallel deployment orchestration for application server fleets, enabling an **8,000-developer ecosystem** to rapidly build and scale ecommerce for Walmart US and Canada. Evangelized adoption through internal tech talks and drove migration from expensive proprietary third-party platform to open-source stack, **saving $100+M annually**.
- Led development of 5 frontier live/collab products at **Canva** - Talking Presentations, Reactions, Remote Control, Playlist, Canva Live on the **1B+ presentations/year** platform, growing **10+M MAUs in 2 years**. Authored **patents** and evangelized through engineering blog posts.
- Architected active-active load balancer with **ZooKeeper** for **Atlassian's** Elasticsearch cluster, eliminating manual failover during maintenance and reducing downtime by **20+ hours/quarter**. Increased customer **NPS for search by 15%**.
- Scaled **Canva Search from 20M to 80M MAU** (4x growth) by re-architecting ingestion from monolithic to distributed microservices, adding **Redis** L2 caching, and offloading auxiliary data from **Solr** to **MySQL**.
- **Leadership:** Led teams up to 12; built/managed a 6-engineer squad at Canva while remaining hands-on (20%); authored **5 patents**; shipped **99.999% availability** load balancers and **10x commerce dialog conversions**.
- **Deep and broad expertise:** I consistently learn and improve myself across a variety of technologies in the backend + cloud + AI/ML stack.
- **Current focus areas: Instruction Fine Tuning** for **LLMs**, **RAG**, **Agentic Workflows**, **Distributed Systems**, **Platform Engineering**, **Cloud-Native Architectures**, Vibe coding cleanup (certain languages only).

Work Rights

Australia: Australian Citizen

Technical Skills

Languages: Java (primary), Go, Python, Kotlin, Scala, Node.js
Cloud & Data: AWS (EC2, RDS, DynamoDB, SNS/SQS, ElastiCache), GCP (BigQuery, Dataform, Pub/Sub)
Distributed Systems & Messaging: Kafka, Spark, Redis, ZooKeeper, event-driven and microservices architectures, consistent hashing, active-active topologies, load balancing
Frameworks & APIs: Spring, GraphQL, gRPC, Temporal, Protobuf
Search & Storage: Apache Solr (indexing/serving at scale), caching strategies
AI/ML Infra: LLMs, RAG, LangGraph, agentic workflows, Prefect
Testing & Quality: TDD, unit/integration, regression/performance testing (incl. bespoke tooling)
DevOps: GitHub, Bitbucket, Spinnaker, Terraform, Kubernetes, Helm

Experience

Principal Engineer, Tentacle Software   Jan 2022 - Present

I started a boutique engineering consultancy for high-throughput, low-latency platforms: consistent-hashing topologies, scalability, extensibility, resilience, and automated delivery. I bring my entire gamut of high quality global experience across a range of capabilities to these companies from project management, coding, devops and making hundreds of decisions mostly tactical due to the nature of the arrangement but some strategic.

Responsibilities:

- **0-to-1 builds:** Built greenfield services, created surrounding ecosystems (IaC, CI/CD, SLOs, dashboards), and standardized runbooks/operability.
- Led technical roadmaps, architecture reviews, worked cross functionally with PMs, Product Leads, Security Architects, and other stakeholders.
- Drove JVM tuning, microservice performance, and cost optimisation; coached teams on reliability, observability, and CI/CD best practices.

Client: Macquarie Bank

- Led a cross-functional program across 20+ microservices in the Wealth Adviser Platform to remove latency hotspots fixing caching strategy, reactive processing, database-schema flaws, JVM GC settings, and request-processing logic; contributed targeted PRs while delivering runbooks, dashboards, and diagnostic artifacts so teams could self-remediate at pace. **Results: p95 down 14%, p99 down 9%, throughput up 3.5x**.
- Technology Stack: Java, Spring, Reactor, PubSub, Redis, GraphQL, Spanner, GCP, Docker.

Client: WEX

- Contributed to streaming analytics platform using **Spark Structured Streaming** to process **1.2M+ daily events**, implementing tumbling windows, watermarking, and stateful aggregations for real-time hotel booking metrics across global travel partners.
- Built event-sourced financial reconciliation system with idempotent transaction processing, maintaining **<1s accuracy** for multi-currency merchant accounts and ensuring consistency across distributed ledger replicas.
- Modernized Kafka → Spark → BigQuery pipeline with CDC, schema evolution, and exactly-once delivery guarantees, reducing reconciliation lag **by 65%** and supporting 40+ partner integrations.
- Technology Stack: Spark, Java, GoLang, GoMock, Kafka, Testify, Docker.

Client: Atlassian

- Built consistent-hashing load balancer initially for insta-switch active-passive elastic search routing, then for active-active Elasticsearch, increasing **Confluence search availability +7% globally**.
- Built insta-deploy to all regions from main branch, cutting **deploy lead time from 1 week to 10 hours**.
- Technology Stack: Java, Spring, Zookeeper, ElasticSearch, AWS, Docker.

Client: Coles

- Built core BFF (Backend-for-Frontend) and DevOps ecosystem, cutting **end-to-end latency for Coles online grocery (coles.com.au) by >40%**.
- Partnered with security, product, and cross-team stakeholders to define requirements, v1 architecture, priority use cases, and a scale-out migration plan for remaining workloads.
- Technology Stack: Java, Kotlin, Spring, Reactor, Azure, Docker.

Founding Engineer, Packsmith   Jul 2024 – Nov 2024

- Drove the end-to-end technical strategy for a distributed reverse logistics platform, collaborating closely with PMs and Founders on architectural decisions, requirements and milestones.
- Built a priority/vip tagging system for Shopify feeds, improving shipping times for priority orders by 140%.
- Built workflows in Temporal to optimize shipment flow, ensuring accurate stage progression and significantly reducing operational overhead.
- Technology Stack: GoLang, GCP, Temporal, Docker, Helm, Kubernetes, Terraform, PubSub.

Engineering Manager|Staff Engineer, Canva, Sydney, Australia   Nov 2018 - Jan 2022

- Drove **Canva Search** scaling from **20M to 80M MAU** by decomposing monolithic ingestion to microservices architecture, implementing cache deduplication/invalidation system, and re-architecting **Solr** indexes to offload non-queryable fields to **MySQL** (reducing index footprint). Optimized request processing logic, tuned JVM GC for consistent SLA, and shipped autocorrection, suggestions, trending queries, and feedback systems across full stack while mentoring team on search platform.
- Drove cross-team migration of monolithic search ingestion to microservices architecture, aligning 4+ engineering squads on service contracts and parallel consumption patterns. Orchestrated phased rollout strategy that maintained zero downtime while enabling independent team deployments and 2x faster feature delivery.
- Published technical blogs on Canva's engineering platform and delivered internal and external talks on auto-correct and Canva Live builds.
- Scaled team from 0 to 6 engineers, shipping 7 live collaboration products in <2 years that drove **10+M MAU growth (20% of Canva's total users)**. Owned full people management lifecycle (hiring, 1-1s, performance reviews), collaborated with PMs and peer managers on roadmaps, while remaining hands-on in architecture, design, and helping with code reviews and small changes.

Senior Staff Engineer, eBay, San Jose, California   Nov 2014 - Aug 2018

- Headed the design of a dynamic configuration system and page assembler for eBay's core search, enabling business teams to adapt search UI/UX without direct engineering involvement, cutting months off typical release cycles.
- Built dialog system SDK to quickly ship multi-turn dialogs that include carousels, text, videos, images, questions to production. Has integrations for Facebook and Google Assistant. This dialog system can ship new complex conversations in a matter of minutes and increased Shopbot sales by more than 10x.
- Created an open-source regression-testing framework (Regressr), adopted across multiple departments for real-time performance comparisons between service versions.
- Led multiple project teams of six or more engineers, setting technical vision, coordinating development roadmaps, and facilitating inter-team collaboration.

Principal Engineer (ICT 5), Apple, Cupertino, California   Sep 2013 - Oct 2014

- Principal Engineer for a globally distributed load balancer with 99.999% availability across several API services most notably device activations.
- Oversaw a team of 12 engineers, managing project timelines, code reviews, and architectural decisions. Regularly facilitated consensus-building on design proposals and led strategic engineering initiatives.
- Operationalised infrastructure for device activations across US, Canada and Europe.
- Built significant parts of the platform such as config management, heartbeat monitoring and deployment orchestration.
- Tech: Node.js, Zookeeper, OpenTelemetry, Java, Oracle, Akamai GSLB.

Staff Software Engineer, Walmart, San Bruno, California   Oct 2010 - Sep 2013

- Served as architect and technical lead for Walmart Canada's SEO platform and base-variant management system, reducing bounce rates by 30%.
- Integrated product reviews into the website with BazaarVoice.
- Built cloud deployment parallelization for Walmart's 300+ applications saving deployment times by well over 80%.
- Instituted an enterprise-wide configuration management framework, unifying deployment practices for over 200 microservices.
- Built automatic CRUD HATEOAS generator to autogenerate CRUD APIs for database tables saving IaaS teams well over 8 months of manual work.
- Tech Stack: Java, ATG, Groovy, Spring, Zookeeper, JavaEE, Glu.

EXTENDED CAREER HISTORY

Software Engineer, Best Buy   Aug 2005 - Oct 2009
Software Engineer, Pearson VUE   Nov 2009 - Apr 2010
Software Engineer, Walgreens   Apr 2010 - Sep 2010

Courses & Certifications

- AWS Solutions Architect Associate - AWS (In Progress)
- Advanced Learning Algorithms - DeepLearning.AI
- Machine Learning Specialisation - DeepLearning.AI
- Supervised Machine Learning: Regression and Classification - DeepLearning.AI
- Generative AI with Large Language Models - Coursera

Patents & Intellectual Property

- **Systems and methods for interactive presentations** - US 20230205552
- **Systems and methods for storing and replaying presentations w/ video and audio** - US 20230205808
- **Systems and methods for remotely controlling electronic presentations** - US20230076902A1
- **System and method for increasing throughput of a PaaS system** - US 9342369 B2
- **Verification of complex multi-application and multi-node deployments** - US 20140109082

Blogs & Publications

- Building a Data-Driven Autocorrection System - Canva Engineering Blog
- Lessons Learnt from Building Reactive Microservices for Canva Live - Medium/Canva
- Introducing Regressr: An Open Source Regression Testing Tool - eBay Tech Blog

Hobbies & Interests

- **Travelling:** Exploring new places across Australia, discovering hidden gems and scenic landscapes
- **Culinary exploration:** Trying out new dinner spots and experiencing diverse cuisines
- **Continuous learning:** Working on algorithmic problems and building proof-of-concept projects in free time
- **Fitness:** Long walks to stay active and facilitate thinking.