Harsain Kapoor

Principal Software Engineer

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PROFESSIONAL SUMMARY

Principal Software Engineer with **15+ years** of experience designing and delivering large-scale distributed systems across **Tier-1 banking (NAB, CBA), global SaaS (Zendesk) and AI-enabled products**. Proven track record leading platform modernization, event-driven architectures, developer platforms, and customer-facing systems operating at enterprise scale.

Deep technical expertise in distributed systems, cloud-native platforms, AI integration, reliability engineering, and developer productivity. Technical leader who combines hands-on engineering, architecture strategy, and cross-organizational influence to deliver scalable platforms, accelerate innovation, and drive exceptional customer outcomes.

CORE CAPABILITIES

- **AI Platforms & Intelligent Systems** – RAG, AI Agents, LLM Integration, Workflow Automation, Intelligent Developer Tooling
- **Technical Leadership & Strategy** – Domain ownership, roadmap definition, architecture governance
- **Distributed Systems** – Event-driven systems, microservices, async messaging
- **Platform Engineering** – Cloud-native platforms, AWS, IaC, Kubernetes, reliability and scalability
- **Engineering Excellence** – Dev standards, CI/CD, observability, quality & resilience
- **Stakeholder Influence** – Executive, product, architecture and cross-org alignment

TECHNICAL SKILLS

Languages	Java, Golang, Python, TypeScript, JavaScript
Frameworks	Spring Boot, Vert.x, Quarkus, React, React Native, Node.js, Next.js, Flask
Data & Messaging	PostgreSQL, MySQL, DynamoDB, Elasticsearch, Kafka, Redis, SQS, SNS, Kinesis, RabbitMQ
Cloud & DevOps	AWS (EC2, ECS, EKS, Lambda, S3), Terraform, CloudFormation, Docker, Kubernetes
Architecture	Microservices, Event-Driven Architecture, REST, GraphQL
Delivery	CI/CD (Jenkins etc), Agile, Scrum, Kanban

AI / Emerging Tech	• Retrieval-Augmented Generation (RAG) architectures • AI agent design for operational and developer workflows • MCP (Model Context Protocol) integrations for tool and system interoperability • LLM-assisted SDLC (code generation, review, testing, incident analysis)

SELECTED ENGINEERING HIGHLIGHTS

- Architected distributed banking platforms supporting 3M+ customers and millions of annual transactions.
- Led enterprise-scale loyalty migration initiatives with zero downtime and no customer disruption.
- Designed globally distributed messaging platforms serving 5M+ users across APAC, EMEA, and North America.
- Built event-driven systems leveraging Kafka, AWS, and cloud-native microservices patterns.
- Designed AI-powered architectures using RAG, LLMs, agent orchestration, and enterprise integration patterns.
- Influenced technology strategy, architecture governance, and engineering standards across multiple organizations.

PROFESSIONAL EXPERIENCE

Commonwealth Bank of Australia (CBA) — Melbourne, Australia

Principal Engineer, eCommerce Crew (Payment Acceptance, Everyday Business Banking) | Aug 2026 – Present

- Principal Engineer for the eCommerce Crew within Payment Acceptance, setting technical direction for all card-not-present payment flows for merchants across online and IVR channels.
- Architect integrations with multiple payment gateways, wallets and buy-now-pay-later providers, with fraud screening and 3DS authentication across payment flows.
- Support and evolve an acquired payments platform for existing customers while migrating CBA merchants onto the new unified eCommerce payments platform.
- Starting and leading agentic ecommerce for CBA, defining the agentic commerce capability.

National Australia Bank (NAB) — Melbourne, Australia

Principal Engineer | Nov 2022 – Jul 2026

- Defined technical strategy and architecture roadmap for NAB Loyalty platforms supporting 3M+ cardholders and processing millions of loyalty events and transactions annually.
- Led architecture reviews and technical governance across multiple engineering teams.

- Defined domain boundaries, API contracts, event schemas, and integration patterns across banking systems.
- Drove platform modernization initiatives balancing customer impact, regulatory requirements, and engineering velocity.
- Led decomposition of legacy loyalty capabilities into event-driven cloud-native services using Kafka and AWS, improving scalability, resilience, and independent team delivery.
- Partnered with **product, architecture, risk, and compliance** to deliver solutions that meet security, resilience, and governance standards.
- Influenced engineering direction across multiple domains by establishing architectural patterns, platform standards, and long-term technology roadmaps.
- Collaborated with senior engineering leaders and enterprise architects to align domain strategy with long-term platform and organizational objectives.
- Drove **DevSecOps, CI/CD, and infrastructure-as-code adoption**, improving delivery speed and operational consistency
- Established observability standards using distributed tracing, metrics, and centralized logging to improve incident detection and reduce operational risk.
- Mentored senior and junior engineers; uplift engineering standards, design quality, and decision-making
- Planned and sequenced epics with a multi-year platform and capability lens.

AI & Platform Innovation:

- Designed AI-powered knowledge retrieval architectures using Retrieval-Augmented Generation (RAG) patterns for enterprise information discovery.
- Built LLM-powered workflows to improve engineering productivity, operational intelligence, and decision support.
- Explored agent-based orchestration patterns integrating enterprise APIs, workflows, and event-driven systems.
- Designed and evaluated context-aware AI architectures leveraging enterprise data, workflow systems, and tool integrations.

Key Initiatives

- **Citi Credit Card Loyalty Migration → NAB** – Led architecture and execution of a high-concurrency, large-scale migration for millions of active accounts with zero downtime, safeguarding enterprise revenue and regulatory compliance
- **Personal Cards Loyalty Offers Platform** – Designed an **event-driven offers platform** supporting high throughput and extensibility
- **Buy Now Pay Later (BNPL)** – Contributed to a **high-availability transactional platform** supporting rapid growth
- **Credit Card Instalments** – Core payments capability enhancement aligned with regulatory and risk controls

Tech: AWS, Java (Spring Boot), React, PostgreSQL, Kafka, Terraform

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Zendesk — Melbourne, Australia

Senior Staff Engineer | Sep 2019 – Nov 2022

- Architected globally distributed messaging platforms serving 5M+ users across APAC, EMEA, and North America with high availability and low-latency requirements.
- Designed scalable event-streaming and message-processing architectures supporting real-time customer engagement across multiple communication channels.
- Led architectural decisions around service decomposition, fault tolerance, reliability, and operational scalability.
- Championed organizational reliability, scalability, and performance testing frameworks to bulletproof critical tier-0 global communication infrastructure.
- Served as senior technical escalation point for complex distributed systems incidents, architecture reviews, and cross-organizational engineering challenges.

Key Platforms

- **Business Messaging** – Real-time, scalable messaging infrastructure
- **Public Social Messaging** – Large-scale social channel ingestion and processing
- **Sandbox Platform** – Multi-language experimentation platform enabling rapid innovation

Tech: TypeScript, Java, Kafka, AWS, MySQL, Redis, Golang, Python

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National Australia Bank (NAB) — Melbourne, Australia

Senior Consultant Software Engineer / Team Lead | Sep 2018 – Sep 2019

- Led teams delivering **customer-facing digital platforms**
- Established **engineering standards and best practices**
- Provided hands-on leadership, production support, and stakeholder alignment

Key Projects

- Customer on a Page
- Debt Servicing Platform
- Home Loan Pricing Engine

Tech: AWS (Lambda, ECS, EC2), Java, Node.js, React, Terraform, PostgreSQL, Oracle

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Versent — Melbourne, Australia

Senior Microservices Engineer | Mar 2017 – Sep 2018

- Designed and built **cloud-native microservices platforms**
- Advised clients on **event choreography vs orchestration** patterns

Clients: Transurban, Vocus

Earlier Career (2011 – 2017)

Senior Software Engineer / Technical Lead – Tundra Interactive, Ladoo Pty Ltd, IP Health

- Full-stack development, architecture design, API platforms, mobile and web solutions
- Led teams, sprint planning, and engineering delivery

PERSONAL PROJECTS & INDEPENDENT WORK

Base2 Labs — Founder / Principal Engineer | base2labs.tech

An independent engineering and product laboratory focused on AI-native applications, distributed systems, developer tooling, workflow automation, and cloud-native platform architecture.

Products & Innovation Work

Growli — Parenting Intelligence & Early Childhood Tracking Platform
AI-assisted parenting and early-childhood insights platform focused on structured data collection and intelligent pattern detection.

DraftLog — AI-Enabled Product & Engineering Command Center
AI-enabled product and engineering workspace designed to accelerate ideation, planning, and execution workflows.

Reinvent Property — Property Transaction Modernisation Platform (Australia)
Property transaction modernisation platform exploring secure multi-party workflows, verification systems, and trusted digital interactions.

EDUCATION

Master of Computer Science (Web Computing) - RMIT University, Melbourne | 2011 – 2013
Bachelor of Engineering – Computer Science - Pune Institute of Computer Technology | 2005 – 2009

CERTIFICATIONS & TRAINING

- AI / ML
- Apache Kafka
- Elasticsearch
- AWS
- TDD / BDD

LEADERSHIP & PERSONAL QUALITIES

- Trusted technical advisor
- Strong communicator across engineering and executive levels
- Calm under pressure, delivery focused

- Passionate mentor and engineering culture builder
- Strong advocate for AI-enabled engineering transformation in enterprise environments