
EXPERIENCE

Lead Software Engineer**Mastercard Technologies Canada ULC****Sep 2025 – Present***Decision Management Products (DMP)*

- Leading modernization of Mastercard's Decision Management Platform (DMP); currently rearchitecting legacy monolithic system into a multi-AZ hybrid-cloud microservices architecture; implementing gRPC for high-performance, low-latency inter-service communication using protocol buffers and HTTP/2 streaming; driving domain-driven decomposition of the fraud decisioning monolith to remove tight coupling with IBM ODM rules engine, AI model platform, and Gemfire distributed cache through service boundaries and asynchronous patterns; enabling bi-weekly product releases with automated CI/CD pipelines, targeting **~60%** operational efficiency gain and **~80%** developer productivity improvement upon completion.
- Built Token Provisioning Insights (TPI) service within the digital wallet token issuance pipeline; engineered real-time fraud detection and risk scoring logic with streaming ingestion and rule-based evaluation; optimized for low-latency decisioning to reduce projected **\$600M+** annual fraud exposure (25–30% CAGR in CNP/digital wallet fraud since 2022), while enhancing provisioning success rates and user experience.

Sr Software Engineer II**Narvar Inc. (start-up)****May 2025 – Sep 2025***Notify Platform*

- Rearchitected legacy notification platform into a CQRS-based event-driven architecture using Apache Pulsar as the streaming backbone; implemented rate-limited, backpressure-aware producer APIs to ingest upstream order/shipment events, enabling loosely coupled, resilient microservices with strong isolation and eventual consistency; redesigned processing pipelines to eliminate redundant fan-out logic, reducing Kubernetes pod footprint from **200+ to <10**, resulting in **~\$800K/month** infrastructure cost savings and **~90%** operational efficiency gain through fault isolation, reduced manual triage, and simplified observability.
- Engineered self-healing and predictive autoscaling mechanisms for microservices; built internal metrics pipeline capturing queue depth, arrival rates, throughput, and consumer lag, then used Kyverno policies to validate scaling constraints and extended HPA logic with custom scaling algorithms for intelligent, telemetry-driven resource allocation; rearchitected order/shipment state machines using event-sourced transitions, eventual consistency guarantees, idempotent processing, exponential backoff retries, dead-letter handling, and circuit breakers to ensure reliable execution in the presence of transient failures and distributed system partitions.
- Designed and implemented a comprehensive chaos engineering framework for the notification platform; built automated fault-injection tooling to simulate controlled failures across HTTP services, cloud resources and Apache Pulsar retry/backoff paths; configured fine-grained failure modes (retriable vs fatal, latency injection, partition simulation) and programmatic state transitions (healthy -> degraded -> down) to validate recovery mechanisms; significantly improved platform resiliency, reduced MTTR, and strengthened failure-handling behavior through repeated real-world scenario testing in production-like environments.
- Contributed to the design and implementation of critical components in an in-house rules engine; extended a custom domain-specific language (DSL) by adding new syntax constructs, semantic validation, type-safe expressions, and optimized evaluation runtime to support declarative, high-throughput execution of complex business logic at scale; engineered parallel migration infrastructure using traffic shadowing, feature flags, dual-write patterns, and automated reconciliation to enable safe coexistence of

legacy and new platforms; ensured zero customer impact during phased retailer migration through incremental cutover, real-time monitoring, and rollback capabilities.

Software Engineer II (L5)

Amazon Canada Corp, Vancouver

Oct 2021 – Nov 2024

AWS Commerce Platform and Amazon Lex

- Led consolidation of SubZero and Basilisk large-scale distributed billing platforms into a unified, fault-tolerant architecture; re-engineered data flows so SubZero sourced directly from Basilisk's internal data vending layer (20+ upstream sources, rate-limited cached APIs for 50+ consumers), eliminating redundant aggregation pipelines and enabling Basilisk to adopt SubZero's advanced aggregation technology; implemented idempotent reconciliation, efficient integration, and migration from legacy Apollo cache to AWS ElastiCache (resolving cold-start latency); achieved **~60%** reduction in SubZero Ops tickets, **~\$1.2M/month** infrastructure savings, and **~90%** fewer runtime spike incidents.
- Led technical design and delivery of financing enablement for AWS Marketplace SaaS purchases (announced at re:Invent 2024 with PNC Bank partnership); engineered secure, high-availability API endpoint in Basilisk to expose financing details for real-time PNC approval queries from Payment Console; integrated Marketplace product catalog APIs with rate-limited, idempotent request handling and transaction coordination; resolved ambiguous cross-service requirements under tight timelines, delivering scalable, global financing infrastructure as foundation for multi-bank integrations and multi-billion-dollar revenue potential.
- Led multi-year initiative to develop automated **5-day** region provisioning pipelines (pilots: ALE-US, NCL-UK) within SubZero billing platform; designed custom Infrastructure as Code (IaC) modules, dependency-aware orchestration workflows, and integrations with internal services for repeatable, low-touch global deployments; personally owned and delivered AggregatedView (AV) and ProformaBillingGatewayService (PBGs) components, reducing developer effort for new region launches by **60%** through standardized, automated, and highly reliable deployment patterns.
- Led migration of Blocked By Payer (BBP) functionality from SubZero to BillingConsoleService (BCS); designed and implemented resilient distributed authorization/enforcement layer with secure API integration, idempotent state updates, and fault-tolerant propagation mechanisms; ensured consistent, secure payer blocking across enterprise services, eliminating ~2 Ops tickets/month previously needed for manual payer handling in SubZero.
- Designed and implemented invoice-level credit & rebill (iC&R) engine for AWS Billing Organizations; rearchitected aggregation pipelines from bill-level to fine-grained invoice-level processing across payer accounts and linked accounts with full backward compatibility and no performance degradation; engineered distributed, resilient processing pipelines using idempotent operations, transactional isolation, automated reconciliation, and parallel batch execution to support high-volume credit adjustments and rebilling; eliminated manual interventions and resolved **~\$57M/month** free cashflow deficit for large customers through precise, scalable invoice-level handling.
- Led intelligent autoscaling initiative across four Amazon Lex subsystems; designed predictive scaling logic based on traffic pattern analysis, historical P99 peaks, and real-time metrics to replace slow manual provisioning (~1-month lead time); implemented automated up/down scaling of provisioned resources using forecasting models, dynamic capacity adjustments, and resource reclamation post-peak; eliminated customer wait times, reclaimed idle hardware, and achieved **~\$400K/month** infrastructure cost savings through optimized distributed capacity management.
- Engineered consolidation of Canary infrastructure for Amazon Lex V1 and V2 across 13 AWS regions; migrated and unified legacy V1/V2 canary deployment components using NAWS tooling into a single, centralized platform supporting both bot versions; eliminated separate environments, reduced configuration drift, and enabled automated, consistent canary rollouts; decommissioned redundant legacy

infrastructure, eliminating **~2 Sev2 incidents** per month and delivering **~\$450K/month** cost savings in the globally distributed conversational AI platform.

IT Associate

Morgan Stanley Canada Corp, Montreal

Sep 2017 – Oct 2021

Cash and Security Settlements Platform

- Architected SSI distribution platform to replace legacy mainframe systems with a horizontally scalable, fault-tolerant distributed microservices architecture; designed optimized data pipelines and concurrency mechanisms for real-time SSI queries, powered by Elasticsearch for efficient indexing and high-performance retrieval; sourced SSI data from DTCC Omgeo ALERT for automated validation and enrichment across global brokers, custodians, and settlement venues, then distributed enriched SSIs to all internal Morgan Stanley applications via secure, rate-limited APIs; reduced P99 latency by **80%** (1000ms to 200ms), enabled **10x** throughput scaling, and saved **~\$5M/year** in mainframe costs.
- Led technical modernization of SDLC, transitioned from monthly to bi-weekly releases and reduced feature turnaround time by **~60%**; led trunk-based development adoption, implemented fully automated CI/CD pipelines supporting automated feature deployment, atomic rollbacks, and pre/post-release verifications; introduced Liquibase for declarative RDBMS schema versioning and migrations, eliminating schema drift and integration failures that previously caused CI/CD pipeline breaks and unhealthy database states; enabled Database-as-a-Service provisioning and increased overall development velocity by **~50%**.
- Architected hexagonal (ports & adapters) microservices replacement for monolithic settlement mainframe using Domain-Driven Design principles; created 13 domain-centric, horizontally scalable services with fault-tolerant patterns and direct SWIFT network adapters; orchestrated low-risk migration through coexistence strategies including strangler fig pattern, parallel processing, incremental traffic cutover, automated reconciliation; ensured **100%** settlement accuracy throughout transition; led successful onboarding of first markets, Canada and Asia, handling **~1.5M** daily equity settlement transactions; realized multi-million-dollar annual savings by retiring mainframe processing.

IT Manager

Morgan Stanley Advantage Services, India

Aug 2013 – Sep 2017

Cash and Security Settlements Platform

- Architected Magnet, a high-concurrency, real-time microservices platform for OTC settlement; optimized transaction netting to minimize settlement instructions and SWIFT costs; developed contractual journaling framework using RDBMS stored procedures (containing ~70% of business logic) for accurate daily P&L and Books and Records compliance; supported FX, FX Options, IRD, CDS, Equity, Equity Options, and Bonds across ~40 global markets and 70 currencies with varied cut-off and settlement cycles; processed **\$4B+** daily notional through low-latency, fault-tolerant architecture with strong RDBMS transaction integrity.
- Engineered a high-throughput post-settlement reconciliation platform for large-scale financial operations; designed and optimized distributed batch processing pipelines using partitioned workloads and parallel execution; developed advanced settlement break-detection algorithms incorporating multi-dimensional matching logic, tolerance thresholds, and rule-based exception classification; reduced batch runtime by **~58%** (through efficient data partitioning, indexing, and query optimization), production incidents by **~75%** (via improved break accuracy and reduced false positives), and manual resolution efforts by **~90%** (by automating break categorization and enrichment).
- Delivered regulatory reporting platform for long-settlement transactions under tight deadlines using Spring Batch; integrated 11 subsystems via scheduled bulk feeds, custom ingestion, and staging reconciliation; incorporated Internal Distributed Rule Engine for settlement rule derivation across 80+ markets; built scalable Spring Batch pipelines with validation, transformation, enrichment, and audit logging for **~99%** data accuracy; configured 3 automated daily batches aligned to Tokyo, London, and New York market close times; implemented fault-tolerant batch infrastructure with Spring Batch retry, checkpointing, automated failover, and idempotent reconciliation, enabling mainframe decommissioning.

- Engineered French and Italian Financial Transaction Tax (FTT) reporting platforms; built distributed tax-calculation engine that aggregated transaction and tax data from multiple source systems, calculated taxes per dynamic regulatory requirements, and performed netting/aggregation for reporting; automated full monthly reporting lifecycle via scheduled processing and reconciliation, reducing operational overhead by **90%** while maintaining **100%** compliance; delivered ExtJS-based UI for operations teams with real-time/historical tax views, transaction querying, and analytics insights for tax exposure monitoring.

EDUCATION

Atlanta, Georgia **Georgia Institute of Technology** **Aug 2026 – Dec 2030**

- Master of Science in Computing Systems (Machine Learning specialization)

Gandhinagar, Gujarat **Dhirubhai Ambani Institute (DA-IICT)** **Jul 2011 – Jun 2013**

- Master of Science in Information Technology. CGPA: 9.46/10; President's Gold Medal for the highest academic standing

Surat, Gujarat **Veer Narmad South Gujarat University** **Jul 2007 – May 2010**

- Bachelor of Science in Information Technology. Aggregate: 77.8%

SKILLS

- Java, Spring Boot, Microservices, Kafka, Pulsar, Kubernetes, Docker, Helm, Elasticsearch, RDBMS (DB2, Sybase), AWS, GCP, IaC, CircleCI, ArgoCD, Grafana, DataDog, Splunk, Linux, Bash, Python, TypeScript

AWARDS AND CERTIFICATIONS

- Outstanding Delivery Award, Morgan Stanley (August 2017)
- President's Gold Medal for the highest academic standing, DA-IICT
- Oracle Certified Professional, Java SE Programmer (OCPJP), February 2011