Sunny Singh
sunny@sunny-singh.com | https://www.linkedin.com/in/sunnysingh | **Phone:** 609-273-7780

SUMMARY

Technology executive with 20+ years of experience translating business objectives into innovative engineering solutions, building world-class developer experiences that reduce integration friction and speed time-to-market.

Architect, develop and operationalize resilient, scalable, and highly available distributed systems — from heading Risk Data Platform As a Service, cloud native credit card fraud & credit risk authorization and underwriting platform at Amex — to co-lead Enterprise Architecture, Developer Experience & Frameworks organization building & operationalizing OpenTelemetry observability platform ingesting 250+ TB of traces & logs / day — build multi-billion-dollar Weblogic Server product messaging subsystem at BEA Systems — head cloud-native e-commerce transformation heading Toys"R"Us & Babies"R"Us e-commerce & baby registry division, — Android & iPhone QR code/NFC fob payment apps for my startup — and head algo trading platform at Citi.

Skilled at assembling and motivating high-performing engineering teams, driving alignment across diverse stakeholders, and fostering a culture of excellence and integrity. Drive consensus on decisions across diverse groups. Passionate about mentoring and fostering engineering excellence, with contributions to tech meetups, innovation councils, and mentorship. Adept at shaping and executing technology roadmaps that accelerate time-to-market for digital products, optimize costs through strategic investments, and uphold regulatory compliance. Recognized for leading large-scale initiatives that elevate both business value and technological impact, with core expertise in high-performance distributed computing, clustering, messaging, high availability, and developer productivity. Currently championing anomaly detection ML algorithms identifying seasonal patterns to reduce false positive alerts from logs in production, while exploring generative AI (LLM) models for synthetic data generation for testing in lower environments.

Key Expertise & Achievements:

- **Technical Thought Leader & Innovator:** Hold patents in distributed messaging.
- **American Express – Risk Data Platform As a Service, Payment Authorization & Risk Decisioning Modernization:**
  - Lead the modernization of American Express's Risk Data Platform, Authorization Platform, implementing multi-region Kubernetes architecture, fraud & credit risk decision workflows, ISO 8583 financial message processing in cloud
  - Architect, design and deliver a Fraud & Credit Risk Enhanced Stand-In solution for existing CAS TPF mainframe for planned and unplanned outages, improving stand-in approval rates by 10% for high-risk and 6% for low-risk customers.
- **American Express – Enterprise Architecture Developer Experience & Engineering Productivity:**
  - Champion developer initiatives, streamlining developer onboarding, Standardized API design, atomic failover of APIs in a domain, CI/CD pipelines, GitHub Actions, run books, feature branch management, release workflows, reduce deployment friction and accelerating time-to-market by 10-30%.
  - Architect, design develop, deliver and operationalize an Enterprise Observability & Monitoring OpenTelemetry/Tracing platform, ingesting 250TB+ traces, spans and logs / day, reducing MTTD & MTTR from hours to minutes, and saving $75M annually in operational costs.
  - Led enterprise-wide adoption of best practices in microservices, distributed tracing, telemetry, and standardization of development frameworks, improving code quality, debugging efficiency, and cross-team collaboration.
  - Designed self-service developer platforms, tooling, automation, observability, and operational resilience.
- **Author Messaging, Weblogic Server, Trading platform, Distributed Systems & e-commerce Leadership:**
  - Spearhead architecture, design & development of WebLogic Server, Clustered Distributed Messaging (Distributed Queues & Topics, JMS API), Fast Logging Look Ahead File Store, Key-Value Store subsystems in Weblogic Server at BEA Systems and Oracle
  - Architect, design, develop and deliver high-performance messaging, caching and search solutions at Oracle, leveraging Kafka, Elasticsearch, Lucene, and Exalogic to optimize cloud messaging and telemetry services.
  - Architected, designed, developed and delivered Citigroup's Quantum Trading Platform, enabling low-latency order processing at 120K messages/sec with a daily transaction volume of $2 billion.
  - Head of E-commerce Toys"R"Us & Babies"R"Us, delivering a scalable e-commerce platform which increased online conversion by 4%, and optimized inventory management.
  - Managed online and instore Baby Registry, real-time inventory, Single Sign-On (SSO), and omnichannel retail solutions, significantly improving customer experience and operational agility at Toys"R"Us & Babies"R"Us.
- **AI and ML:** use anomaly detection ML algorithms identifying seasonal patterns to reduce false positive alerts from telemetry data (traces, spans, logs & metrics) in production, while exploring generative AI (LLM) models for synthetic data generation for testing in lower environments.

Sunny Singh

sunny@sunny-singh.com | https://www.linkedin.com/in/sunnysingh | **Phone:** 609-273-7780

Work Experience

American Express ▪ New York ▪ USA.   Aug 2022 - present

VP, Authorization Modernization Platform

_____

Oversee and deliver a multi-million-dollar initiative, leveraging technical expertise and cross-functional leadership to architect, build, and deliver the following key components:

- **Risk Data Platform As A Service:** Established a globally deployed risk data platform as a service supporting both consistent and eventually consistent data models for risk variables.
- **Risk Decision & Authorization Workflows:** Batch and Realtime feeds from Analytics Big Data platform and other SORS (System of Record), Enhanced and modernized core authorization services including POS (Point of Sale), post-POS Fraud & Credit Concern, Payment Held Remit, CIUMC (Can I Use My Card)/CSP (Check Spending Power), Safekey, American Express Login Authentication, and supporting APIs.
- **Multi-Region Kubernetes Architecture:** A cloud-native Kubernetes Authorization platform spanning multiple regions and availability zones, serving as the foundation for all Risk Decision Technology journeys.
- **Data Localization Router:** Intelligent routing layer to ensure data requests comply with regional data residency and localization requirements.
- **Merchant Receipt of Charge & Customer Credit Card Accums Matching:** A robust accumulation matching mechanism to reconcile merchant receipts of charge (ROC) with customer credit card accumulations, improving transaction validation accuracy and strengthening risk management.
- **PIN Services**: PIN setup and activation, online PIN Management, Chip-and-PIN Transactions, PIN to withdraw cash advances at ATMs
- **Network Connectivity & Lifecycle Management:** Led cross-functional teams to modernize network connectivity processes, ISO 8583 parser (for parsing EBCDIC Authorization requests) and lifecycle management.
- **Data Retention & Purging:** Automated capping and purging controls to maintain 90 days (up to 2,000 records) of customer data, optimizing storage and compliance.
- **Caching Framework:** Data caching layer to reduce latency and ensure high availability for authorization services.
- **Health Checks & Automated Disaster Recovery:** Introduced real-time monitoring and automated failover capabilities to ensure continuous service availability and resilience.
- **Synthetic Data Generation using LLM:** Looking into use of LLMs to generate PII data for testing

_____

American Express ▪ New York ▪ USA.   Sept 2018 – Aug 2022

VP, Co-Head Enterprise Architecture, Developer Experience & Frameworks

_____

Digital Transformation & Operational Efficiency: Drove cross-functional technology and business initiatives to create a technology roadmap, align investments with long-term goals, and ensure regulatory compliance. Reduced time-to-market for new digital products by 10–30%, achieving cost savings through strategic technology investments.

Building Distributed Teams, Developer Experience & Driving Innovation

- Cultivated top engineering talent, fostered distributed development practices, and championed a culture of resilient, scalable systems design.
- Promoted thought leadership standardizing development workflows (e.g., API design, atomic failover of all APIs in a domain, release/feature branches, pull requests), consistent eventually consistent data deployments.
- Streamline interactions, processes, and tools influencing how software developers create, deploy, and maintain applications and services.
- Improve productivity, code quality, and satisfaction: Ease developer onboarding and productivity, Intuitive Tooling & APIs, consistent coding standards, architectural guidelines, cloud services, CI/CD Pipelines, run books clarifying system behaviour, configuration, robust observability & troubleshooting steps.

PRODUCTS, FRAMEWORKS & PLATFORMS DELIVERED:

Enterprise Observability Product – ELF (Unified Tracing, Logging, Monitoring, Alerting)

- Architected, Developed and operationalized a high-volume end-to-end journey distributed tracing/logging platform ingesting 250TB+ of traces and logs daily, compliant with OpenTracing and OpenTelemetry standards.
- implicitly unify millions of existing log4j log statements with OpentTracing Traces & Spans without any code change.
- Onboarded 1,400+ enterprise applications, reducing mean time to detect (MTTD) and mean time to repair (MTTR) from hours to minutes.
- Realized $75M in Splunk license savings / year while integrating automated alerts with ServiceNow, Slack, and Jira.
- Implemented anomaly detection to detect seasonality patterns or anomalous patterns using Random Cut Forest ML algorithm to reduce false positive alerts.

Source-Sink Framework

Delivered a robust data movement framework providing at-least-once guarantees with built-in circuit breaking, rate limiting, retries, and exponential backoffs—facilitating reliable data transport across diverse systems.

Fraud & Credit Risk Enhanced Stand-In

Designed and deployed an enhanced stand-in solution for the legacy Credit Authorization System, maintaining service continuity during both planned and unplanned outages.

Improved stand-in approvals by 10% for high-risk customers and 6% for lower-risk profiles when the primary authorization system was unavailable.

Enterprise Data Vault (EDV)

Architected a centralized tokenization/de-tokenization platform to handle sensitive PII data, reducing PCI scope and enabling secure data processing for multiple business units.

Distributed Leader Election Framework

Implemented a Raft-based consensus protocol to ensure a single active leader for mission-critical applications, seamlessly promoting secondaries upon leader failure to maintain consistency and avoid conflicts.

Standardization of Disaster Recovery & Failover

Established enterprise-wide disaster recovery principles across multiple regions, ensuring high availability and continuous business operations

---

Toys"R"US & Babies"R"Us ▪ New Jersey ▪ USA.   Jan 2017 – July 2018

VP, Head of Digital Engineering

As head of Digital Engineering *for www.toyrus.com and www.babiesrus.com*, I was a key member of the executive leadership council responsible for driving technology strategy. I reported into CTO and managed a team of 300+ colleagues and ~400 contractors

I was responsible for delivering e-commerce Omni-channel platform for Toys"R"Us, Babies"R"Us & Baby-Registry e-commerce website, mobile apps, micro-services e-commerce platform, inventory management and Single-Sign-On (SSO). Until August 2017, Toys"R"Us had outsourced its website to the former GSI Commerce, now Radial. To improve the customer experience and operational efficiency of web sales, Toys"R"Us started its in-house re-platforming project in 2015. After a couple of years of delay and burning close to $100 million with IT implementation partners, Toys"R"Us established their digital engineering organization in late 2016 to launch the new website. As of August 21 2017, Toys"R"Us website and mobile apps are running 100% on the in-house platform developed by the year-old digital team.

- Delivered Omni-channel E-commerce Platform, Analytics, Baby Registry, Real-Time inventory, Single Sign-On, Loyalty, Search, Promo engine, in-store digital experience, and mobile apps. The new website & e-commerce platform handled 100% of the peak holiday traffic without downtime. Online conversion increased by 4%, AOV by 6$, higher penetration of BOPIS/ISPU by 40%, and 10% increase in Digital Baby Registry creates.
- Introduced engineering culture at Toys"R"Us – 65+-year-old company. Thought leader and technology sponsor driving Digital Transformation, Cloud-Native Applications, Infrastructure is Code, DevOps, Path to Production building CICD Pipelines, cross-organization agile teams owning product end to end, micro-services, analytics identifying drop-off points in the conversion funnel, SEO, monitoring & green, blue deployments
- Heading multi-billion-dollar Toys"R"Us, Babies"R"Us & baby-registry e-commerce website, micro-services e-commerce platform, real-time inventory, Single Sign On (SSO) and mobile-apps
- Achieved 200% gain in development and deployment velocity by moving key functionalities from Oracle legacy ATG stack to react.js and micro-services framework.
- Moved 30 to 40% of the systems to AWS Cloud with features such as auto-scaling, auto-failover, and immutable infrastructure with instant rollback capabilities.
- DevOps and Agile Evangelist at Toys"R"Us. Instrumental in establishing the dev-ops team that introduced automated build, testing, and deployment using Git and Jenkins to the software development lifecycle.
- Lead Real-Time-Inventory, a cross-functional initiative, centralizes inventory across DC, FCs, and stores. Introduced event-based architecture to integrate fragmented legacy systems. Besides cloud-based queuing technology, the system under construction uses NoSQL Cassandra for event aggregation and elastic-search for faster access. It improved website conversion and introduced new features like dynamic bundling & dynamic pricing.
- Thought leader and technology sponsor for SSO (Single Sign-On), to improve customer experience by bringing fragmented credentials/authentication for baby registry, loyalty, and e-commerce functions.

Oracle ▪ New Jersey ▪ USA.   2009 – 2016

Consulting Member of Technical Staff, Oracle Cloud Messaging, Telemetry & Search, and Scheduler services

---

- Designed solutions in collaboration with Functional experts, Product Owners, and Client Advocates
- Hire, mentor & grow talent into senior technology and leadership roles, and be ready to be hands-on if needed
- Drive consensus, and innovation, streamline day to day Oracle Cloud Messaging operations, program management, and product development to streamline oracle cloud messaging service
- Lead development & deployment of Oracle Cloud Messaging
- Manage onsite and offshore engineering staff for timely delivery of Messaging, Telemetry & Search Services
- Architect & design Big Data Search Subsystem using Kafka, Elasticsearch, Lucene & Kibana
- Customize performance of WebLogic Clustered Messaging on Oracle Exalogic Elastic Cloud
- Mentor low CPU footprint across machines, avoid false sharing for high-performance computing and achieve message throughput rate from 30,000 msg/sec to 130,000 msg/sec

---

Citigroup Equities ▪ New Jersey & New York ▪ USA.   2005 - 2009

VP, Quantum Trading Platform

- Thought Leader for Citigroup Quantum Trading Low Latency Trading Platform with a peak capacity of 120K messages/second and daily transaction volume of 2 billion dollars for DMA, Algo, Cash, and Market Making
- Managed talented group of onsite and offshore engineering staff for timely delivery of Quantum Trading Platform
- Technology Evangelist responsible for establishing CICD and Agile Development Practices at Citigroup
- Manage Trading Engine FIX Exchange connectivity
- Spearhead development of consistent Fast Persistent Order Cache for equities
- Led development of eventually consistent Event cache for Market Data and high speed messaging framework
- Mentor for horizontal scaling, lock-free algorithms, network packet & CPU core load balancing, NUMA cache-coherency & cache lines, blocking and non-blocking IO (futures & async future), statistically unique intelligent OrderIds in space and time, Consistent Hashing for Trading Platform using distributed computing techniques

Ilogin.com ▪ New Jersey ▪ USA.   2005 - 2006

Co-founder

- Ilogin QR Code and NFC Mobile Wallet white-labeled for OTI America
- Secure website passwords and personal information in Cloud for ilogin.com

Weblogic Server, BEA Systems ▪ New Jersey ▪ USA.   1998 - 2005

Senior Software Engineer

- Architect, design, develop and deliver WebLogic Server: Core distributed messaging subsystem, JMS APIs
- Architect, design, develop & deliver WebLogic: Clustered/Distributed Messaging & SAF (Store & Forward)
- Architect, design & develop fast Logging Write-Ahead File Store, Key-Value Store in WebLogic server product which is used internally by various subsystems like JMS File Store, Weblogic TLOG store inside WebLogic

EDUCATION

Bachelor of Engineering, Computer Science, Birla Institute of Technology, Ranchi, India

PATENTS

- System and method for Store-and-forward for highly available message production
  Publication Number: US20080263221 http://www.google.com/patents/US20080263221

- Patent-pending Split and Merge algorithm to secure customer's identity and password:
  Application Number: 62/460,217

TECHNICAL SKILLS

- Distributed and Concurrent programming
- Clustered Distributed Messaging
- Lock-Free Algorithms, Blocking & Non-Blocking I/O
- XA Transactions
- Open Telemetry, OpenTracing
- Telemetry & Search
- High Availability, Load Balancing, and Failover
- AWS, GCP, GCP PubSub
- Jaegar, Elasticsearch

- Network packet and CPU core load balancing
- Consistent Hashing, Distributed Cache, Cache Coherency & Cache Line
- Multi-Threading, Thread pool and Work Manager
- Git, CI/CD, GitHub Actions, Jenkins, Perforce
- Java, Python, Data frames, NumPy, Jupyter Notebook, Docker, Kubernetes, C, C++, Kafka, Weblogic, Oracle RAC, GoldenGate, Cassandra
- Agile Methodology (Scrum, Kanban, Continuous Delivery)

VOLUNTEER EXPERIENCE

- Volunteer leaf cleanup for elderly in and around Princeton, NJ
- Mentor high school students in and around Princeton in Java & Thinking Algorithmically
- Member Tech Meetups in Princeton