Yaadata (*Yadi*) Abdalhalim

Backend Software Engineer | Distributed Systems Engineer

Professional Experience

Senior Software Engineer, Real Time Card Processing *(Financial Platform)*

Chime Financial | Mar. 2024 - Present

Financial Platform is a robust, highly available platform with systems scaling to billions of annual transactions while providing end-to-end account management and integrated partner capabilities for enhanced member experiences.

- **Led architecture of high-availability settlement processing pipeline critical for platform migration**
  - Successfully processed over 2 billion settlements (*$60+ billion in transaction volume*) within the first 6 months.
  - Achieved >99.999999% availability while maintaining 900+ events processed per second.
  - Designed comprehensive telemetry system enabling rapid failure detection and resolution while mentoring the team on the implementation.
- **Architected and led development of modern transaction expiration system, significantly improving financial operations**
  - Led cross-functional collaboration with product, legal, and vendor teams to redesign expiration processes.
  - Achieved 99.99%+ processing success rate while handling complex financial workflows.
  - *Reduced annual risk exposure by <$14M* through improved expiration mechanisms.
  - Successfully expired $330k/month in held funds, improving members' financial posture.
- **Drove redesign of observability systems for real-time card processing services and systems:**
  - Reduced incident triage time from 4 hours to under 10 minutes for critical metrics including error rates, product-specific issues, and latency anomalies.

Software Engineer, Member Entities *(Financial Platform)*

Chime Financial | Oct. 2021 - Mar. 2024

- **Architected processes, capabilities, sub-systems to power a high-performance Member Entity Service managing critical profile, account, and card operations**
  - Drove significant performance improvements from 180ms to 44ms p99 latency while scaling to >800 RPS through database query optimization and I/O performance tuning. Established and achieved 99.999% availability, implementing team-wide SLOs for availability, latency, and error rates.
  - Collaborated and implemented distributed saga orchestration pattern to ensure data consistency between Financial Platform and VISA, handling complex transactional workflows while maintaining system integrity.
  - Mentored engineers in system design and implementation, guiding team members in building new Member Entity subsystems while establishing architectural best practices through Technical Design Documents.
  - Collaborated across Data, Member Platform, and Member Experience teams to define and implement solutions that aligned with broader organizational needs and goals.
  - Partnered with technical lead to implement transactional outbox pattern for reliable event propagation, ensuring data consistency for downstream consumers.
- **Core engineer in company's strategic migration from legacy payments processor to Financial Platform (FinPlat):**
  - Architected critical sub-systems to enable seamless data transformation, successfully processing over 60M card, account, and profile records while maintaining system consistency. Achieved 99.9999% availability and 100% data accuracy during migration, processing over 300M validation records.
  - Designed and implemented durable asynchronous processing architecture for SpotMe feature integration with FinPlat, enabling an additional *$1.1B* in transaction volume on the platform through real-time card processing capabilities in the first year.
  - Collaborated across product engineering and infrastructure teams to identify and resolve complex data discrepancies, implementing automated reconciliation processes to maintain data integrity.
- **Led development of company's first Personal Identifiable Information (PII) tokenization service with 3 engineers, processing 50M+ sensitive records**
  - Optimized mass file decryption through concurrent processing within each node, reducing batch processing time from 120+ minutes to under 20 minutes.
  - Built secure service-to-service authentication system and backoffice operations including partner bank reporting & credit reporting.
  - Powered new customer onboarding by enabling secure data sharing with KYC/AML vendors.
- **Launched the company's first PCI-DSS certified storage and retrieval service for sensitive payment data.**
  - Designed multi-tier secure architecture with AWS account isolation, strict ingress/egress controls, and automated access management. Precautions reduced security risk and certified the service for PCI-DSS compliance.
  - Engineered distributed encryption system with in-memory key caching, reducing end-to-end latency by 41%.
  - Implemented real-time and async sub-systems of the tokenization service that enabled critical product features including secure card display and PIN management.
  - Built comprehensive observability stack with automated alerting, detailed runbooks, and proactive monitoring, achieving >99% service reliability.
  - Architected and implemented digest generation to power search of encrypted data, enabling rapid data retrieval for agent and backoffice bank operations for over >30M card records.

Software Engineer, ACH Modernization Platform *(Commercial Enterprise)*

Capital One Financial | Feb. 2021 - Sept. 2021

- Led the design and implementation of a mission-critical payment reversal service within Capital One's modernized Commercial Enterprise ACH Platform, processing over $5B in payment reversals annually.
- Implemented sub-components of a high-throughput distributed system using Choreography Saga Pattern, achieving >3,000 messages/second processing capacity while maintaining >99.999% availability.
- Drove end-to-end ownership of payment reversal functionality within a platform handling $1T+ in annual ACH volume, ensuring seamless integration through event-driven architecture using Kafka.

Software Engineer, *Small Business Acquisitions*

Capital One Financial | Aug. 2019 - Jan. 2021

- Architected and optimized a high-performance Node.js API on AWS Lambda that processed queries across 50M+ businesses with sub-second P99 latency through strategic Elasticsearch index optimization and field-level search refinement.
- Reduced Lambda cold start times by 82.1% through aggressive dependency optimization and bundle size reduction, while maintaining full AWS SDK functionality.
- Partnered with Product and Business stakeholders to launch a new acquisition service that transformed small business customer acquisition capabilities nationwide.

Contact Information

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- https://github.com/Ydot19
- https://yadi.io

Conference Talks

- OWASP Global App Security Conference (Lisbon, Portugal 2024)

  Title: Token It Up A Notch: Elevating Payment Security
  Summary: Building performant, secure tokenization service for storing and utilizing sensitive payment and member data
  Watch: https://tinyurl.com/yadi-owasp-2024

Skills

`Architecture Design`
`Consensus Building`
`Software Design & Testing`
`Technical Coaching & Mentoring`
`Product Design and Development`
`Platform Development`
`Internal Developer Tooling Development`
`Platform Operational Tooling`
`Event Driven Design`
`Change Data Capture (CDC)`
`Data Integration with OLAP Systems`
`Fault Tolerant / Low-Latency System Design`
`Application Security Hardening`
`Designing Encrypted Storage Systems`
`Observability Tooling Development`
`Optimize Usage of OLTP Systems`
`SQL Query Optimization`

Education

Chemical & Biomolecular
Engineering, BS
Summa Cum Laude
Ohio State University
Class of Dec. 2017