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Professional Summary

Software Engineer with 10+ years of experience building low-latency financial systems, from cryptocurrency matching engines and FIX protocol implementations to distributed post-trade platforms on AWS. Led a team of engineers developing a matching engine for a regulated digital asset exchange, and currently designs event-driven architectures using DynamoDB Streams, Lambda, SQS, and Redis for real-time notification delivery in trading systems. Deep C++ experience spanning codebase modernization (C++98 to C++20), performance profiling with Valgrind and uftrace, and Unix socket-level performance benchmarking.

Employment History

Software Engineer **Iress, Philippines** **June 2023 – Present**

- Designed and implemented an event-driven permission notification system using DynamoDB Streams, Lambda, SQS, and Redis Pub/Sub, delivering real-time permission change events to multiple BFF pods via Server-Sent Events (SSE). Used DynamoDB Streams as the single source of truth to eliminate dual-write risks.
- Identified and resolved an out-of-order message delivery problem in the permission event pipeline caused by partial SQS batch failures during Lambda retries. Implemented version-based idempotency using DynamoDB Stream sequence numbers, allowing consumers to discard stale updates.
- Implemented centralized cache invalidation across multiple BFF pods using FusionCache with Redis ElastiCache as the distributed L2 cache and Redis Pub/Sub backplane.
- Developed backend services for the post-trade allocation system using the BFF pattern with ASP.NET Core, providing position summary and account details to fund managers for trade allocation workflows.
- Identified a race condition in the Trade Summary SSE streaming service where parallel firm snapshot loading set a completion flag prematurely, causing inconsistent data. Proposed fix adopted by the team.
- Developed a performance testing framework for InteropIO (Glue42) post-trade widgets using Playwright with Chrome DevTools Protocol, measuring render time, memory usage, and script execution.
- Led the 64-bit migration of a legacy C++ trading platform, upgrading from C++98 to C++20. Built Python tooling to automate symbol extraction from linker error logs and validate exports for duplicates.
- Built proof-of-concept post-trade widgets using React, ag-grid, and InteropIO (Glue42) to validate cross-widget communication patterns for the next-generation trading UI.

Software Engineer **Archax, Philippines** **February 2021 – June 2023**

- Led a team of 3 engineers developing and maintaining the matching engine for Archax, a regulated digital securities exchange.
- Built a performance benchmarking tool that sends order message payloads over *Unix sockets* and calculates throughput and latency metrics, used to establish baselines and detect regressions.
- Implemented round-robin connection/reconnection logic with configurable timeout intervals and non-blocking connect for matching engine client sessions.
- Implemented message version validation on client login, detecting protocol mismatches before order flow begins and preventing silent message corruption.
- Designed the OMS load balancing architecture for multi-organization support, including a metric collection service for organization-to-OMS rebalancing with scheduled and admin-triggered modes.
- Designed and implemented a subscription model for the OMS, enabling each instance to selectively process only inbound matching engine messages for its subscribed organizations—a prerequisite for horizontal scaling.
- Designed and implemented risk limit management for the OMS, including configurable controls for single-order and daily-aggregate limits.
- Designed and deployed a FIX protocol test client in *Golang* using QuickFIX, supporting standard message validation and burst mode for benchmarking the FIX middleware.
- Initiated CPU profiling of the OMS using *uftrace* and *Callgrind* to identify hot paths, leading to targeted optimizations in the order processing pipeline.

Senior Engineer **CryptoBLK, Hong Kong** **March 2019 – March 2021**

- Integrated the Dilithium post-quantum signature scheme into the Abelian cryptocurrency, replacing select ed25519 computations with lattice-based cryptography for quantum-resistant keys and signatures.
- Integrated quantum-proof linkable ring signatures (*SALRS*) into the Abelian project, advancing post-quantum privacy guarantees.
- Implemented a Solidity ERC-20 token smart contract for the Abelian (ABE) ICO on Ethereum.
- Designed and implemented integration tests, Corda flow tests, and contract tests for the Letter of Credit amendment feature on the Contour trade finance platform. Built the corresponding Corda smart contracts and Spring API endpoints.

Software Engineer **Retone, Remote** **July 2020 – February 2021**

- Implemented sharding for concurrent magnetic field computations in the Radia engine, parallelizing previously sequential workloads. Developed a software-based UART reader/writer for microcontroller pre-deployment validation.

Firmware Engineer **Lexmark, Philippines** **November 2018 – March 2019**

- Implemented Apple SMTP handling for legacy printers (*Embedded C++*). Migrated build system from Unix Makefiles to *CMake*. Resolved 30+ firmware defects identified by Coverity and SonarQube.

Freelance Software Engineer **Firo & Horizen, Remote** **January 2018 – September 2018**

- Deployed CI/CD pipelines (Travis CI, CircleCI, Jenkins, gitian-builder) producing reproducible builds across 3 platforms. Integrated the MTP protocol upgrade into the ElectrumX wallet server. *(Firo)*
- Integrated Horizen cryptocurrency into the Ledger Nano S hardware wallet. Implemented domain fronting for the Horizen light wallet to bypass network restrictions. *(Horizen)*

Software Engineer **NCR Corporation, Philippines** **August 2012 – February 2018**

- Integrated payment terminals (AMEX) and third-party hardware (scales, IBM POS) into NCR self-service checkout systems across deployments including Australia Post, Walmart, and Post Office UK. Primarily MFC C++.
- Built diagnostic tooling (C# log parser with telnet, predictive test scripts) for IBM POS and configured Jenkins CI for automated nightly builds.

Education

Dumaguete City, Philippines **Silliman University** **March 2012**

- B.S in Computer Engineering. Thesis: Android-controlled quadrotor with Bluetooth communication.

Remote **ConsenSys Academy** **October 2019**

- Ethereum Developer Bootcamp. Project: Proposal DApp

Technical Skills

Languages: C++ (98/11/14/17/20), C#/.NET 8, Python, Golang, TypeScript, JavaScript, Solidity, SQL

Cloud & Infrastructure: AWS (Lambda, DynamoDB, DynamoDB Streams, SQS, SNS, EventBridge, ElastiCache Redis, EKS, CloudWatch, IAM), Terraform, Docker, Kubernetes

Trading & Financial: FIX Protocol (OnixS SDK, QuickFIX), Matching Engine development, OMS, Post-trade allocation, Risk management

Frameworks: ASP.NET Core, React, Node.js, Corda, Spring, Boost, Abseil, ZeroMQ, Protobuf, FlatBuffers

Data & Messaging: DynamoDB, PostgreSQL, SQLite, Redis (caching + Pub/Sub), FusionCache, Server-Sent Events

Performance & Testing: Valgrind, Callgrind, KCachegrind, uftrace, gprof, Grafana k6, Playwright + CDP, Datadog, Catch2, Google Test, xUnit

Tools: Git, CMake, Bazel, Docker, Vim, JetBrains IDEs, Visual Studio, TeamCity, Conan, gdb, Sanitizers