Ryan Dielhenn

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Experience

Zephyrcache — A Self-Healing Distributed Cache

Los Angeles, CA

Personal Project — *2025 – Present*

- Designing and building a distributed caching system in Go using consistent hashing, with automatic rebalancing and fault tolerance.
- Integrating etcd for cluster membership, lease management, and peer discovery to ensure coordination and liveness guarantees.
- Developing monitoring and benchmarking tools to measure routing efficiency, replication overhead, and recovery times under simulated failures.
- Planning a gossip-based membership and failure detection subsystem to reduce reliance on centralized coordination and improve scalability.

Confluent

Mountain View, CA

Software Engineer & Software Engineering Intern — *May 2020 – Jul 2022*

- Collaborated across engineering teams to improve reliability, observability, and security during Kafka's transition to a ZooKeeper-free architecture (KRaft).
- Adapted Cluster Linking to support KRaft, enabling cross-cluster replication without ZooKeeper.
- Integrated metrics pipelines to monitor cluster health and quorum state in KRaft mode.
- Improved Kafka usability as a Summer 2020 intern by implementing dynamic client reconfiguration (no-restart updates) and enhancing Confluent Cloud's cluster rebalance tooling with asynchronous replica support.
- Continued contributing to Apache Kafka during Fall 2020 while completing my undergraduate degree, before returning full time in Jan 2021.

University of San Francisco

San Francisco, CA

Research Assistant — *Jan 2020 – Dec 2020*

- Conducted research on distributed systems and edge computing architectures under faculty supervision.
- Designed and implemented a geospatial indexing system (Geopresence) optimized for IoT and low-power devices, using RoaringBitmap for bitmap compression and HyperLogLog++ for approximate cardinality estimation.
- Benchmarked prototypes and demonstrated hyper-local, location-aware queries (e.g., retrieving air quality data directly from nearby sensors instead of centralized APIs).

Teaching Assistant — Big Data & Operating Systems — *Aug 2019 – May 2020*

- Led weekly office hours, provided project design/debugging support, and evaluated student assignments.

Assistant Systems Administrator — *May 2019 – Aug 2019*

- Automated updates and maintenance tasks for Linux lab machines, reducing manual overhead for IT staff.
- Diagnosed and resolved hardware/software issues for faculty and students in a high-demand academic environment.

Academic Projects

Distributed File System

Fault-Tolerant Distributed File System

- Implemented a distributed storage system in Java using Google Protocol Buffers, Bloom filters, and Netty for scalable and efficient request handling.
- Added replication, dynamic node scaling, and data compression to ensure high availability and optimize storage utilization.

Fire-Engine

In-Memory Multi-Threaded Search Engine

- Built a search engine that constructs and queries an inverted index from crawled web pages entirely in memory for high-speed lookups.
- Implemented multi-threaded index construction and query execution, improving search performance on large datasets.

Education

California State University, Los Angeles

Los Angeles, CA

M.S. in Computer Science (In Progress) — *Expected 2026*

- Relevant Coursework: Advanced Artificial Intelligence, Advanced Software Engineering, Data Science

University of San Francisco

San Francisco, CA

B.S. in Computer Science, Minor in Mathematics, GPA: 3.75 — *2016 – 2020*

- Relevant CS Coursework: Big Data, Software Development, Data Structures & Algorithms, Operating Systems, Computer Architecture, Programming Language Paradigms, Senior Capstone
- Relevant Math Coursework: Calculus I & II, Formal Methods, Linear Algebra, Abstract Algebra

Technical Skills

Languages	Java, Scala, Go, C, Python, JS
Technologies	Kafka, Spark, Docker, Git, Netty
Concepts	Distributed Systems, Systems Design, ML