Julie Lee

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Experience

Software Engineer July 2022 – Present
Hewlett Packard Enterprise *Durham, NC*

- Improved availability of a cloud-native application during software upgrades by 80% by leading the design of a controlled update strategy for microservices sensitive to rescheduling.
- Cut engineering effort to achieve high availability for a distributed storage system by 50% by designing and building a patented solution in Go that leverages Kubernetes scheduler semantics for shard rebalancing.
- Delivered transactional guarantees for cross-shard operations in a C++-based distributed file system by implementing, testing and debugging features for atomicity, consistency and isolation of metadata operations.
- Drove a 4-week initiative to tune resource allocations for 67 services in a cloud-native application, aligning on per-service metrics with 13 owning teams and coordinating batched testing for fast delivery.
- Saved 100+ engineers 2-8 hours per configuration change in a cloud-native application by leading development of a Go-based test harness for isolated testing without full product builds.
- Delivered industry-standard protocol support for a proprietary distributed file system by integrating with an open-source NFS server via a custom interface layer.

Software Engineer Intern May 2021 – Aug 2021
Hewlett Packard Enterprise *Remote*

- Designed and implemented an asynchronous PostgreSQL client for use within a custom C++ multithreading framework, enabling distributed database use for metadata in an object storage system.
- Presented a design proposal and documented tradeoffs and implementation details for future developers.

Projects

Litter Box Tracker (Go, C++, Docker)
Personal Project, 2025

- Created a smart home solution that tracks cats' litter box habits for early detection and diagnosis of health issues, with standard IoT protocol support for integration with existing smart home ecosystems.
- Designed the hardware and software architecture to support resource-constrained systems (2-4 cores, no GPU) and affordable, widely available peripheral devices.
- Serialized critical and compute-intensive asynchronous operations, including video recording and computer vision inference, to ensure system reliability under resource constraints.

Geo-Replicated Key-Value Store (Go)
Master's Program, Stony Brook University, 2021

- Built a causally consistent key-value store for data replicated with high latency across datacenters, and tested system correctness and availability under simulated network partitions and delays.
- Implemented the Raft consensus algorithm to provide strong consistency within each datacenter, and layered it with dependency checking and conflict resolution to ensure causal ordering of requests across datacenters.

Education

Master of Science in Computer Science May 2022
Stony Brook University Stony Brook, NY

Bachelor of Science in Computer Science and Applied Mathematics & Statistics May 2021
Stony Brook University Stony Brook, NY

Skills

Programming Languages: C++, Go, Python, C, Java, Bash
Cloud Infrastructure & Development: Kubernetes, Docker, Helm, gRPC / protobuf, AWS
Debugging & Observability: gdb, strace, pprof, Prometheus, Grafana