Nan Zhang

650-417-8699 | nz1@alumni.cmu.edu | linkedin.com/in/nan-zhang-nz1 | github.com/zhangn49

Technical Skills

Programming Languages: Java, Python, C/C++, Bash, Golang, Lua, JavaScript
Frameworks & Libraries: Protocol Buffers, Guava, JUnit, Mockito, Netty, React, Node.js, Flask
Developer Tools: Git, Vim, GDB, AWS, GCP, MongoDB, IntelliJ, VisualVM, Yourkit Profiler, Jira

Experience

Member of Technical Staff 3   July 2019 – Present
VMware   *Palo Alto, CA*
- Contributed to *VMware NSX* datastore solution: open source project **CorfuDB**, a consistency platform designed around the abstraction of a shared log. CorfuDB objects are in-memory, highly available data structures providing linearizable read/write operations and strictly serializable transactions.
- Owned **performance** PCC of bugzilla, triaged 30+ performance bugs by leveraging logs, metrics and profiling tools like Yourkit Profiler. Identified root causes of application slowness and memory leaks by looking into snapshots and heap dumps. Optimized the efficiency of object read/write and scanAndFilter. Provided product engineers as well as quality teams with database usage advice to improve the efficiency of their workflows.
- Joined as a firefighter when **log replication** project was short of hands and close to release. Designed & implemented an integration test framework, came up with multiple scenarios to cover all network failure and topology change test cases. Owned replication PCC, triaged tens of related bugs and created a series of patches to extend the functionality and observability of replication. Published a research paper regarding its design and architecture as a co-author in RADIO 2021.
- Led the **next generation of compaction** project from scratch. Designed a scalable and fault tolerant distributed solution to compact the shared log. By sharding and parallel read/write, it significantly improved memory and CPU utilization.

Software Engineer   July 2017 – Oct. 2017
Bilibili Inc.   *Shanghai, China*
- Implemented *Bilibili Video Cache Invoker* by Golang to collect information of cached video and I/O stats, provided multiple cache query APIs to the central coordinator, improved video cache hit ratio on 300+ CDN nodes.
- Utilized *go pprof* to investigate memory leaks and cpu bottlenecks, decreased memory & CPU usage significantly.
- Deployed the cache query tool on all CDN edge nodes and reduced video loading time by 80ms in average.
- Designed and built a network tool based on Golang and OpenResty to measure the latency and throughput between any two video streaming CDN nodes periodically and instantly.

Education

Carnegie Mellon University   Moffett Field, CA
M.S. in Software Engineering, GPA3.79/4   *Jan. 2018 – May 2019*
Courses: Computer Systems, Cloud Infrastructures, Cloud Computing, Foundations of Software Engineering

Sun Yat-sen University   Guangzhou, China
B.S. in Software Engineering, GPA3.8/4   *Aug. 2013 – Jun. 2017*
Core Courses: Data Structures, Operating Systems, Computer Networks, Database Systems, Compilers

Projects

Computer Systems Projects | *C, Linux*   Sep. – Dec. 2018
- Implemented a tiny Linux shell that can execute commands and supports job control and I/O redirection.
- Designed and developed a dynamic memory allocator of C and improved its memory utilization to 74%.
- Developed a HTTP proxy that can serve concurrent connections and cache static content in memory.

Twitter Analytics Web Service | *Java, MapReduce, MySQL, HBase, AWS*   Feb. – May 2018
- Developed a performant and scalable web service written by Java on AWS for Twitter data analysis.
- Applied ETL on a 1TB dataset with MapReduce and manipulated data in MySQL and HBase systems.
- Designed schemas as well as configured and optimized databases to improve system throughput, and analyzed metrics of servers and databases to improve performance and reliability of the web service.