Om Saran K R E

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SUMMARY

- **3+** years of experience in software development, in private & hybrid cloud industry.
- Experience with designing and building medium-scale **distributed systems**, **containers**, **kubernetes**, **systems programming**, **virtual machines (qemu/kvm)**, **Software Defined Networking** (OpenFlow, OpenVSwitch).
- Highly proficient language: **Python**. Proficient languages: **Swift (Server)**, **Golang**, **C**. Familiar languages: **C++**, **JavaScript**.
- Research experience in user-space **FileSystems** for **Persistent Memory**.

INDUSTRY EXPERIENCE

Software Engineering Intern — Apple Inc.
May 2022 – Aug 2022 — Cupertino, USA

Distributed builds system development

- Developed features, fixed bugs in various components of a distributed build system's infrastructure.
- Rewrote a component to upgrade web framework to a well supported open source one while ensuring full backward compatibility and deploying it to production.
- Improved concurrency performance and correctness in a content addressable storage system.

Member of Technical Staff 4 — Nutanix
Jan 2018 – July 2021 — Bangalore, India

- Developed and architected AOS's (Nutanix Distributed Operating System) OpenFlow based SDN controller to natively integrate AOS's networking with Google Cloud Engine's networking.
- Researched and worked on Proof of Concepts to bring Nutanix's hypervisor/AOS to a cloud that offers first class bare metal service. Proposed the networking architecture to Nutanix's software architects and a distinguished engineer.
- Built and architected a distributed system that manages the life cycle of ephemeral virtual Nutanix clusters for Nutanix Test Drive. Also includes a cache management system to provide end-users with instant Nutanix clusters. It is one of the highest lead generation tool at Nutanix.
- Developed L3 networking solutions and cloud architecture for porting Nutanix clusters to Google Cloud Engine (Virtual Nutanix Clusters) leveraging Nested Virtualisation used in Test Drives.
- (Intern Jan 2018 - July 2018) Developed features and enhanced a python based test automation framework used for functional qualification of Nutanix clusters company wide.

ACADEMIC RESEARCH

- Working on BigHPC project with focus on Virtualization Manager to deploy heterogeneous workloads (BigData and HPC) on heterogeneous HPC Infrastructure. Advisor: Prof. Vijay Chidambaram
- Verification of Persistent Memory file systems by building Linux Kernel Modules for instrumentation.
- Implemented libc/system call interposers in user-space for SplitFS FileSystem to support applications like RocksDB, YCSB and POSIX filesystem test suite.
- Adding support for older CPUs - use older CLFLUSH in place of newer CLFLUSHOPT in SplitFS.
- Found and fixed bugs in SplitFS.
- Developed faster **cp** using new asynchronous file i/o api **io_uring** and performed rigorous performance analysis. Repo
- Added mmap support for Assise - A cross media distributed filesystem - in single node mode.

PUBLICATIONS

- Hayley LeBlanc, Shankara Pailoor, **Om Saran K R E**, Isil Dillig, James Bornholt, Vijay Chidambaram. "Chipmunk: Investigating Crash-Consistency in Persistent-Memory File Systems." Accepted to **EuroSys 2023**.

AWARDS

- Nutanix Hackathon – Won team prize of $5000 in each of 2018, 2020
- MRD Merit Scholarship: top 5 performers in undergraduate academic year 2016
- CNR Rao Merit Scholarship (25% fee waiver) for being in top 20% during academic years 2015 & 2016

EDUCATION

MS in Computer Science — The University of Texas at Austin, USA — Aug 21 – May 23 (expected)
BE in Information Science & Engineering — PES Institute of Technology, Bangalore, India — Aug 14 - May 18