Rahul Rai

Interested in Distributed Systems, Hardware Software Interfaces, Systems.
Can write clean, maintainable, code with unit tests, and benchmarks.

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EXPERIENCE

Standard Chartered , Bangalore —Developer

May 2019 - June 2020

Message Queues both H/W and the S/W. Low level drill down on code path, C++ 17, C, thread sync/async, kernel bypassing, HFT,boost, sockets, multi threading, STL, linear algebra, numerical methods.

★ Lowered memory overhead by half, latency by an order of magnitude for numerical libraries. Demonstrated false sharing, not just speculation.
★ Being the first hire, was also responsible for logistics, training, travel, hiring, set up of end to end source flow, builds, tests, code guidelines, tests, layout.
★ Used modern C++ constructs, ebpf, zero copy.
★ Challenging limits of multiprocessor synchronization, atomics, no overhead serialization, small string optimizations, alignment of data.

Oracle, Hyderabad— *Software Developer 2*

July 2015 - December 2018

Data Replication : Device Drivers in Linux Kernel from scratch, HLDs from scratch, LLDs from scratch, True async design from scratch, actual deep down scalability _in terms of I/O, memory, vCPU_ of modules (not just adding a caching/redirection/streaming tool)

★ Agile development, design and ownership, of the kernel module and of the user space app, in the LINUX BLOCK layer - On the data path/request queues.
★ Code from 0, with pre coding of unit tests, evaluate designs, design user space, code kernel mode components for replication across data center/ cloud instances, vm migrations, helped others for orchestration.
★ The component comes in the data path pipeline, and causes all other depending consumers to proceed asynchronously, while maintaining data integrity.
★ Multi threading in user space app, ioctls, file system operations, persistence.
★ BDD, and benchmark asynchronous (not glibc aio -now called io_uring-) I/O, comparison of I/O schedulers, scaling multi-threaded memory management.
★ Boot Up of drivers, udev, virtualization, micro benchmarking, threading and socket programming.
★ Mirroring agent using RAID and linear devices - Persistent metadata across reboots.

SKILLS

C, C++, C++17/11, go-lang, rust, unit tests, code reviews, maintainable & robust code.

High Frequency Trading, Forex, low latency I/O, ultra low latency, Numerical Methods, numa, multi core/multi socket CPU, cache aware code.

SAN, SCSI, Replication, Virtualization, distributed storage, file systems, Distributed Algorithms, Consensus, CAP, Paxos.

System Programming in Linux & Windows, Win32, posix, secure, Linux kernel, NT Kernel, Linux Device Drivers, kvm, async I/O, openmp, cuda.

gdb, windbg, kgdb, clang/llvm/gcc toolchains, g micro benchmark, coverity, ebpf, fio, flame graphs, UML, perf, kvm, message queues.

Python, R, rust, go, shell, design patterns, HLD, High Scalability

LANGUAGES

English, Hindi

iGATE, Mumbai— *Senior Software Engineer*

May 2012- July 2015

★ SAN protocol for EMC2 – Windows driver ioctls to report throughput of FC, FCOE, ISCSI, SAS, and RAID. – catered to the requirements of the entire protocol team

★ Triage Tool Development -

★ Analytics on unstructured log files generated by storage arrays; logs were used by support engineering teams to dispatch the defect tickets; results of the scripts were studied by teams designing the map reduce jobs; process to present failure class by sustenance teams got faster.

★ Softphone Software Adapters -

★ Designed control for channeling requests between softphones (s) and headsets; Interaction between SF's SDK & Headset's HID interfaces need to be in resonance. The adapter made calling a seamless experience.

Cisco, *Contract Software Engineer*

Dec 2018 - May 2019

Training, Solutions, Proposals, speed up - short term fixed role

Hired for features, provide solutions/consulting for SDN/SDS, virtualization. Modernized modules in the code base, independently learned containers, distributed systems.

EDUCATION

Advanced Computing Training School/CDAC— *Diploma in System Software Development*

September 2011 - March 2012, Bangalore
Training/Coursework had modules on, but not limited to, high performance computing, multithreading, network analysis, Operating Systems Internals

BHABHA INSTITUTE OF TECHNOLOGY/UPTU— *Bachelors in Computer Science and Engineering*

August 2007 - August 2011 , Kanpur

CERTIFICATIONS

Rice University on Coursera Platform July 2018

Parallel, Concurrent, and Distributed Programming in Java

https://www.coursera.org/account/accomplishments/specialization/EGYMW8TMD38Y

EMC *Data Science*
March 2014

https://www.youracclaim.com/badges/93bd2c91-dccc-464d-8ad8-56ac048776bf

EMC *Data Lakes for Big Data* - ETE-BD101 June 2015

https://educast.emc.com/verify/ICFvbSdt