Ritesh Agarwal · Senior Software Development Engineer · Pune, MH, IN · riteshja88@gmail.com · +91 9623 126 536

Ritesh Agarwal | Resume

- Status: Espressif Systems, Senior Software Development Engineer
- Fields: Software Development, Cloud Computing, Networking, Storage, Linux Kernel, Programming
- Prefers: C, C++, Python, Linux/UNIX based host and target OS, Git / GitHub, OpenSource
- Activities: Hackathons, Technical Workshops, Geek Meetups

EXPERIENCE

2018 — Senior Software Development Engineer — Espressif Systems, Pune

- Technology Area: IoT.

2017 - 2018 — Software Development Engineer — Cisco Systems, Bengaluru

- Technology Area: Nexus PI team.
- Components owned by me: Syslog, Sdwrap(logging), Mtrack (Memory leak detection).
- Project worked on recently: Secure Syslog POC.
- Have been involved in support and bug-fixing of various bugs in owned components.

2015 - 2017 — Software Development Engineer — Cisco Systems, San Jose

- Technology Area: NFV, Virtualization, Virtual Packet Core Platform, DPDK
- Debugging support for DPDK based critical process.
- Involved in deployment of various combinations of the NFV deployments for both KVM and Vmware ESXi.
- Development of features and Bug fixing support.
- Debugging features : minicore of a heavy weight multithreaded process.
- Bulkstats addition/modification and integrate it with the Bulkstats ecosystem.
- Work in areas of SRIOV, Passhthrough, Virtio NICs in KVM.
- 32 bit to 64 bit conversion of forwarder task.

2014 - 2015 — Research Assistant — KernelSec Lab, UIC

- Technology Area: Xen Hypervisor, Operating Systems, Asynchronous calls, Events.
- Project: IPC Subsystem Cleanups
- Analyse how to cleanup incomplete events that gets posted in the kernel by system calls in the IPC subsystem area.
- Identify test scenarios and write test cases for those scenarios.
- Provide a way to handle incomplete events in the event of Program termination normally or forcefully.
- Publish report in LaTeX for the work done.

2013 — Graduate Summer Intern — Yahoo! Inc

- Technology Area: OpenStack, Cloud Computing, Nicira, Software Defined Networking(SDN), Open vSwitch , REST APIs, Web Services, Python, Python Request Library.
- Project: Monitoring Solution for Nicira NVP / Openstack Networking.
- Collect network related statistics from Nicira NVP via Web APIs and Open vSwitch via command line and parse them to be able to facilitate easy analysis of networking related problems for Virtual Machines on the cloud. Integrate with the Internal Monitoring Cloud called YAMAS that mantained time-series and helped plot graphs.
- The project mainly involved understanding the virtual network topology and getting well versed with SDN Concepts and then come up with a feasible solution as to of what information can be collected from Nicira and OVS and will be useful to facilitate monitoring.

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2013 - 2014 Graduate Research Assistant RRC, UIC

- Job Responsibilities involved variety of work in different areas.
- Administration for Blade Servers, ZFS Servers, Samba Server, Git server, Mail server, Web Servers, Database Server and Network.
- Provide support and suggest solutions to researchers/professors for different needs.

2010 - 2012 Software Development Engineer Cisco Systems

- Technology Area: 3G / UMTS, GTP (GPRS Tunneling Protocol), 4G / LTE Packet core networks, CISCO ASR5000, Carrier Grade Operating System(StarOS), Network Applications.
- Implement new features in product, CLI Approval, CLI Announcement, Requirement Document.
- Validate fix issues reported by customer / QA team.
- Browse through huge log files to explore the correct code path.
- Load, analyse core dumps in gdb, analyse linked lists in core dumps.
- Unit Test cases in Python Framework.
- Write bash, expect scripts to come up with complex network setups.
- Achievements at Work :Developed VIM-CDETS a vim interface for CDETS(Bug Tracking Tool).

EDUCATION

May 2015 MS in Computer Science Univ. of Illinois, Chicago

- Cumulative GPA 3.85 / 4.0
- Courses in Areas: Computer Networks, Computer Architecture, System Security, Object Oriented Development, Algorithms, Parallel Processing, Applied Graph Theory.
- Projects in Networking area: HTTP Client/Server(threaded), DNS Resolver, Bittorrent(event based), Reliable Transport over a non-reliable channel(TCP), Study of Internet via distributed network hosts.
- Projects in Microprocessors and Computer Architecture area: Cache replacement policy for Simplescalar (Access pattern analysis), Study of Compiler optimization technique for matrix multiplication using blocking method to improve cache use.
- Projects in Object Oriented Languages and Environment: Object Oriented Design with C++, Memory leak analysis with valgrind, Cincom Smalltalk, iOS App Development with Xcode in Objective C.
- Projects in Parallel Processing: MPI Programming.

May 2010 BE in Information Technology P.I.C.T, Univ. of Pune

- Cumulative GPA 3.60 / 4.0

2010 Project: Reconfigurable Virtual Storage Device P.I.C.T, Univ. of Pune

- Guided by Ratnadeep Joshi (Toshiba) and Furquan Shaikh (Google).
- Undergraduate Research Project in Linux kernel.
- Ranked 3rd in Impetus and Concepts 2010 in Database and Storage Systems Area.
- Stack Device driver that combined SSD and Hard Drive and exported itself as a virtual block storage device.
- Processed bio requests from filesystems and mapped it to a bio on the respective device.
- Heuristic Access pattern analysis to characterize current hot blocks using EWMA.
- Workqueues for block relocation.
- Journaling of block relocation sub-operations for recovery from incomplete operations due to system failure.
- Performance: Achieved the performance close to that of SSD, with a SSD contributing to 30% of to the total storage.

2007 Antivirus P.I.C.T, Univ. of Pune

- Won First Prize in State Level Project Competition in 2007.
- A miniproject developed in C and a GUI with DOS Mode Graphics, C++ for GUI Library.
- Mouse Handling using Interrupts via Assembly Language code.
- Scan for virus signatures in files and detect infected files.
- Reverse the effects of virus that were non-destructive in nature.

2008 PortScanner P.I.C.T, Univ. of Pune

- Distributed Port Scanning by exploiting the ID field in the IP Header.
- Worked much faster and was almost correct with its results.

TECHNICAL SKILLS

PROGRAMMING LANGUAGES KNOWN:

- C(Proficient), C++, Assembly Language(8086), Python

COMPUTER SKILLS / TOOLS KNOWN:

- Code Browsing / Refactoring : vim (also developed a plugin), cscope, ctags, awk, sed.
- Debugging Program / Cores:
- Gdb(GNU Debugger): used conditional breakpoints and watchpoints to narrow down the problem, analysed core file, stack frames, inspected code paths, examined packets(hexdump) in memory, wrote gdb scripts / helpers for e.g to traverse linked list.
- Pdb(Python Debugger): Debugged python scripts.
- Network Tools : wireshark and tcpdump(analyzed packet dumps), hping3 and ip (tailored packets), callgen and SAE-SIM(to tailor GTP packets).
- Programming : Socket programming, Device drivers, kernel modules, system calls.
- Log Analysis : NPU Manager logs / packet-dumps, Session Manager logs.
- Web : curl, Python Request Library to use REST APIs
- Scripting : bash, expect, GNU Screen.
- Versioning System : BitKeeper, svn, git.
- Bug Tracking Tools : CDETS, GNATS, Bugzilla.
- Kernel Hacking: Academic level idea of with hands-on in ProcFS, DebugFS, Tracing, Kprobes, Workqueues, BlockIO, the / mutex.
- Optimization : BRANCH_PREDICT, Likely / Unlikely.
- Publishing : latex, gnuplot.
- Virtualization : KVM / Qemu, VMware ESXi, virtio, SR-IOV, PCI-PassThrough.

OTHER KEYWORDS:

- OpenVSwitch, Cloud Computing, Storage / Network QoS, Solid State Drives, Operating Systems, Filesystems, UNIX, Microprocessors, Regular Expressions, TCP / IP, IPv6, P2P(churn, co-operative tit-for-tat), Telecommunications, Embedded System.

EXTRA-CURRICULAR

- Won numerous State and National Level Programming, Technical Quiz and Hacking Competitions.