Abhinav Rajagopalan

Systems programmer

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Education	**Anna University**, *BEng in Electrical and Electronics*, GPA: 8

Education

Anna University, *BEng in Electrical and Electronics*, GPA: 8
Chennai, TN   *2013 - 2017*

P S Senior Secondary School, *AISSCE in Science* 84%   *2011 - 2013*
Chennai, TN

Experience

Oracle Corporation
Linux Developer, Member of Technical Staff   *Jul 2019 - present*
Bangalore, KA

- Linux (Oracle Linux, Unbreakable Enterprise Kernel) and VM (KVM/libvirt, QEMU, SR-IOV, Docker) development
- Responsible for mission critical Linux kernel and userspace build, testing, release engineering and errata releases
- Development of kernel and userspace upstream patches, bug/CVE fixes, QA testing and triage for x86_64, aarch64, SmartNIC, MIPS64 platforms
- Implementing efficient performance tuning methods, tracing & profiling tools (DTrace, eBPF), loadable kernel modules (UEFI, Secureboot, pmem)
- Created and added new release, automated QA testing for kernel & userspace components including LTP, OLT, cgroups, iSCSI, SELinux, filesystems (ext4, XFS)
- Worked on creating a fault tolerant redundancy business continuity framework for OCI infrastructure provisioned by Terraform, k8s

Wifin Technologies
Software Engineer (Infrastructure & Blockchain)   *Sep 2018 - Jun 2019*
Chennai, TN

- Implemented Blockchain architecture based on IBM Hyperledger for financial services web application used in the logistics industry.
- Developed client-server architecture and runtime based on Hyperledger Fabric platform to deliver transactions at higher processing speeds and low latency.
- Deployment and orchestration of blockchain network via operating system virtualization platform, Docker and container orchestration service, Kubernetes.
- Secured and encrypted server and gateway route in Blockchain network with necessary authentication protocols. (MSP: X.509, TLS)
- Instructor and consultant for the engineering team in software and infrastructure systems.

Rekindle Automations (NSRCEL, IIM-B)
Software Engineer (Systems)   *Sep 2017 - Mar 2019*
Bangalore, KA

- Implementing efficient methods in biomedical instrumentation and sustainability using applications of IoT and embedded systems.

- Engineered primary systems codebase and improved usage of power and memory in low level hardware.

- Developed remote communications system between interlinked devices based on MQTT, XMPP, HTTPS protocols for seamless monitoring and operation.

- Maintenance and upgradation of software and networking protocols at regular intervals including patchwork and testing.

- Built a custom RTOS (real time operating system) based on FreeRTOS for the ARM Cortex M3 architecture to manage the monitoring system.

L & T Technology, *Technical Intern*   *Jun - Aug 2016*
Chennai, TN

- Used mathematical analysis and MATLAB/Simulink to design an efficient micro-inverter based on solar photovoltaic energy.

- Designed an electronic prototype schematic for the microinverter to improve elimination of harmonics and power losses with OrCAD EE PSpice.

Technical

Languages:	C, C++, asm (x86_64, ARM, MIPS), Python, LISP (Scheme)
Tools:	Git, Shell, gcc, OpenCL, CMake, LaTeX
Platforms:	UNIX, POSIX compliant - BSD, Linux
Other:	MATLAB, HDL (VHDL/Verilog), RISC, LLVM/clang

Projects

Smart Furnace for conveyor belts using PLD pluggable technology, *Industrial project, 2018-19, (RTOS, PLC, RS232-UART, ModBus, LabView, Comsol)*
Implementing a PoC for conveyor belt furnaces using smart pluggable PLD control system.
Designed and built Adaptive control system with fuzzy logic mechanism for control and processing of data from industrial PLC used in furnaces.
Simulated prototype design and model of industrial PLC with a PLD control system using LabView and Comsol multiphysics for a PoC operation and heat transfer analysis.

Power optimiser for MPPT Solar PV system, *Thesis, 2017, (MATLAB, Simulink, Atmel AVR, PIC)*
Built and demonstrated an efficient converter and MPPT system for optimized power generation through a solar photovoltaic process.
Designed a schematic prototype on the MATLAB Simulink platform to simulate a grid connected PV energy system and exhibit desirable I-V/P-V characteristics.

Efficient usage of artificial grow light from LEDs using selective PWM techniques for healthy growth of plants and drip system, *International Journal of Engineering Research and Technology (IJERT), 2017*
Presented a paper on a simulated automated system for effortless horticulture using a sensor and actuator-based mesh network with visual feedback by Internet of Things.
Simulated a system automating horticulture using IoT with actuator-based network and drip system with MATLAB.

Automated system for effortless horticulture using a sensor and actuator based mesh network, *Research project, 2017*
Automated horticulture using IoT with actuator-based network and drip system. Created an automated system for effortless horticulture using a sensor and actuator-based mesh network with visual feedback via Raspberry Pi by Internet of Things. *(Internet of Things, Raspberry Pi, PIC, OpenCV, electronics)*

Image detection of solid object fields in a farm or area using computer vision and OpenCV.

Smart farming using IoT with remote Android application, *Research project, 2016, (Java, Android, Android Studio, Node js, Internet of Things, electronics, Bluetooth)*
Built a system to monitor and control a farm and detect moisture content and other such parameters implementing Internet of Things with an Android application.

Wireless power transmission using High-Frequency resonant transformer, *Research project, 2015, (Tesla coil, electronics, transformer)*
Created a prototype model to increase the efficiency of power consumption and range of wireless power transmission using high frequency resonant air core transformer.

Designed a portable & efficient Inverter using regenerative snubbing, *Project proposal, 2014, (OrCAD EE PSpice, electronics)*
Modelled a simulation to create a more efficient and portable Inverter using Regenerative Snubbing at Texas Instruments Innovation Challenge: India Design Contest '15

Chat/IM client with JDBC & SQL, *Course project, 2013, (Java, JDBC, SQL)*
Built a personalized instant messaging service application between systems on the same network with Java and MySQL using Java Database Connectivity.

Achievements	**Research Day**, *SVCE*	2017

Won first place for presenting a prototype model for "Automation for effortless horticulture using a sensor and actuator based mesh network" at SVCE Innovates - Student Research Day 2017.

NCAEEE, *SVCE* 2017
Presented a paper on "Efficient usage of artificial grow light from LEDs using selective PWM techniques for healthy growth of plants" at the National Conference on Advances in Electrical and Electronics Engineering organized by the Department of Electrical and Electronics Engineering, SVCE held on 10 & 11th March 2017.

Smart horticulture IoT, *SVCE* 2016
Placed third at SVCE Innovates - Student Research Day - 2016.
Presented a working model for building a system to monitor and control a farm and detect moisture content and other such parameters implementing Internet of Things with an Android application.

Open source software/FOSS, *GNU/other* 2009 - present
Contributed changes to code, documentation mainly through patches and issues to the FreeBSD and Linux kernel subsystems, GCC & LLVM compilers over the years.
Involved with the patches/issues in mailing lists of the following projects

- FreeBSD
- LLVM compiler infrastructure (Clang front end)

Miscellaneous, *various* 2000 - 2011
Awarded several certifications for skills and excellency in free hand sketching, graphic design & painting.

Organizations **CARE**, *SVCE* 2014 - 2017
Member of the conservation and sustainability group

Photography Club, *SVCE*   *2014 - 2017*
Active participant of observing and shooting natural habitats

Environmentalist Foundation of India   *2008 - 2013*

- Involved in various events and clean up drives.
- Participated in Olive ridley turtle conservation walks.
- Cleaning and scientific restoration of lakes in India for restoration of biodiversity.