Abhiram Balasubramanian

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LinkedIn

SUMMARY

- Seeking a full-time position as a Systems/Software Engineer
- Areas of Interest : Linux kernel development, embedded systems programming, performance optimizations and task automation

PUBLICATIONS

- **Abhiram Balasubramanian**, Marek S. Baranowski, Anton Burtsev, Aurojit Panda, Zvonimir Rakamaric, Leonid Ryzhyk. System Programming in Rust: Beyond Safety. *In 16th Workshop on Hot Topics in Operating Systems (HotOS), May 2017* PDF
- Vikram Narayanan, **Abhiram Balasubramanian**, Charlie Jacobsen, Sarah Spall, Scott Bauer, Michael Quigley, Aftab Hussain, Abdullah Younis, Junjie Shen, Moinak Bhattacharyya, and Anton Burtsev. LXDs: Towards Isolation of Kernel Subsystems. *In 2019 USENIX Annual Technical Conference (USENIX ATC 19), July 2019* PDF

EDUCATION

University of Utah *Master of Science*, Computer Science (Thesis Track) *August 2017*

Sri Ramakrishna Institute of Technology *Bachelor of Engineering*, Electronics and Communication Engineering *May 2010*

COURSEWORK

Computer architecture, Operating systems, Distributed systems, Computer security research, Advanced algorithms

PROFESSIONAL EXPERIENCE

Ubiquiti Networks *Firmware Engineer*
Draper, UT *August 2017 - Present*

- Designed and developed firmware features for wireless access points in a closed source (Atheros) Linux 802.11 driver
- Debugged complex firmware issues directly on customer's site
- Provided technical support to community

Samsung Research America *Intern*
Mountain View, CA *May 2016 - August 2016*

- Explored safe features of Rust programming language to implement system software
- Built a Software Fault Isolation library with recovery mechanism in Rust

Robert Bosch India *Senior Software Engineer*
Coimbatore, India *May 2013 - July 2015*

- Designed a PCIe Multi-IO card to aid autonomous driving for Mercedes Benz.
- Designed a hardware debugger (JTAG) using openOCD for Embedded IDE.
- Optimized interrupt latency on automobile's ECU running RT-Linux

Kalycito Infotech *Senior Design Engineer*
Coimbatore, India *October 2010 - April 2013*

- Worked on Open-source real-time Industrial Ethernet stack (openPOWERLINK)
- Designed a PCIe based high-performance openPOWERLINK master on Xilinx platform.
- Worked on Linux BSP development/board bring-up on ARM/OMAP platforms.

RESEARCH EXPERIENCE

Flux Research Group *Graduate Research Assistant*
University of Utah *August 2015 - August 2017*

- Masters thesis : *Fast NVMe layer for a decomposed Linux kernel.* My thesis was motivated by the fact that the existing monolithic kernels require some form of isolation to confine the effects of faulty code, introduced by kernel extensions. I specifically focused on developing general techniques for isolating high-performance drivers in the Linux kernel, without compromising performance, and reusing existing code as much as possible.
- Mitigation of Signal Return Oriented Programming (SROP) attacks in the Linux kernel; submitted a patch to the Linux Kernel

RELEVANT SKILLS

- **GNU/Linux**: Experience with network and block layer of the Linux kernel, multithreaded programming/design, debugging kernel and user-land bugs.
- **Programming languages**: C, Python, Rust, JavaScript, JSON, x86/ARM Assembly, Shell scripting
- **Version Control**: git and SVN
- **Protocols/Standards**: 802.11, NVMe, PCIe, JTAG, SPI, I2C, RS232, Ethernet POWERLINK, CAN 2.0
- **SoC/Controllers**: IPQ806x, Xilinx Zynq 7000, TI's AM335x, Xilinx and Altera FPGAs