Shriram Raja

Blacksburg, VA

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EDUCATION

Boston University, Boston, MA — Sep 2023 - Present
Incoming Ph.D. in Computer Science
- Advisor: Dr. Richard West

Virginia Tech, Blacksburg, VA — Aug 2021 - May 2023
Master of Engineering, Computer Engineering — *3.96/4.00*
- Advisor: Dr. Haibo Zeng
- Project Title: Hybrid Priority Assignment for Global Fixed Priority Scheduling
- Relevant Coursework: Real-Time Systems, Linux Kernel Programming, Multiprocessor Programming, Compiler Optimizations

PSG College of Technology (PSG Tech), Coimbatore, India — Aug 2017 - May 2021
Bachelor of Engineering, Electrical and Electronics Engineering — *9.76/10.00*
- Relevant Coursework: Embedded Systems & IoT, Operating Systems, Internetworking & Applications, Digital System Design

SKILLS & TECHNOLOGIES

Programming Languages	C, C++, Python, and Verilog
Microcontrollers & Boards	Arduino, 8085, 89C52, MSP430, and Raspberry Pi
Tools	MATLAB, Linux Shell, Git, Tableau, and LLVM
Systems	Linux Kernel Programming, FreeRTOS Programming

EXPERIENCE

Virginia Tech — Mar 2022 - May 2023
Research Assistant — *Blacksburg, VA*
- Working on the implementation and experimentation of a Priority Assignment algorithm for Global Fixed Priority Scheduling on Multiprocessors using Response Time Estimation Range, advised by **Dr. Haibo Zeng**
- Contributed to the development of a novel mixed Priority Assignment algorithm that combines the advantages of heuristics and response time estimation (in place of actual response time) to provide better overall performance.

Security Solutions BU, Marvell Semiconductor — May - Aug 2022
Firmware Engineer Intern — *Santa Clara, CA*
- Developed skills to understand and work with a large codebase spread across different repositories.
- Developed debugging skills in an embedded environment.
- Implemented the FRAM Logging feature in the latest version of LiquidSecurity Cloud HSM to enable communication between the processor and the FRAM during boot-up.

TEACHING EXPERIENCE

Spring 2022
Fall 2022 **ECE 5480: Cybersecurity & IoT**, Graduate Teaching Assistant *Virginia Tech*
Spring 2023

PROJECTS

Scheduler for Real-Time Operating Systems 2022

Programmed different periodic scheduling algorithms, resource management protocols, and a polling server for FreeRTOS. Determined the best priority that can be assigned to the polling server by analyzing the response time of aperiodic tasks by varying periodic load for different test cases when executed on an Arduino Mega 2560.

LLVM Optimization Pass 2022

Implemented the Lazy Code Motion (LCM) algorithm to eliminate redundant statements and move arithmetic expressions to the latest point in the program without modifying the functionality of the code. Evaluated the performance of the optimization pass using open-source benchmarks.

CPU Profiling Tool for Linux 2021

Used Kprobe to track the cumulative run time and the number of times each task is scheduled by the Linux scheduler. Created and maintained a red-black tree that stores the run time of the tasks. The 20 most scheduled tasks are identified, and their stack trace is displayed using the /proc file system.