Shriram Raja

Boston, MA

shriramr@bu.edu | shriram-raja.github.io | Shriram-Raja | shriram-raja

RESEARCH INTERESTS

Real-Time System Scheduling, Automotive Real-Time Systems

EDUCATION

Boston University, Boston, MA — Sep 2023 - Present

Ph.D. in Computer Science

- Advisor: Dr. Richard West
- Coursework: Introduction to Operating Systems, Computing Systems for Robotics

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
- Selected Coursework: Real-Time Systems, Linux Kernel Programming, Multiprocessor Programming, Compiler Optimizations

PSG College of Technology, Coimbatore, India — Aug 2017 - May 2021

Bachelor of Engineering, Electrical & Electronics Engineering — *9.76/10.00*

Selected Coursework: Embedded Systems & IoT, 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, and LLVM
Systems	Linux Kernel Programming, FreeRTOS Programming

EXPERIENCE

Boston University — Sep 2023 - Present

Research Fellow — *Boston, MA*

- Contributing to the development of DriveOS, an integrated vehicle management system for autonomous electric vehicles.

Virginia Tech — Mar 2022 - May 2023

Research Assistant — *Blacksburg, VA*

- 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.
- Implemented and evaluated the algorithm for Global Fixed Priority scheduling on multiprocessors, advised by Dr. Haibo Zeng

Security Solutions, Marvell Semiconductor — May - Aug 2022

Firmware Engineer Intern — *Santa Clara, CA*

- Implemented FRAM Logging feature in LiquidSecurity Cloud Hardware Security Module to enable communication between the processor and the FRAM during boot-up.

- Developed skills to understand and work with a large codebase spread across different repositories.

TEACHING EXPERIENCE

ECE 5480 Cybersecurity & IoT, GTA, Virginia Tech — Spring 2022, 2023, Fall 2022

PROJECTS

Scheduler for Real-Time Operating Systems — Apr 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 — Apr 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 — Nov 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.