Md Sayeedul Islam

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EDUCATION

Master of Science in **Computer Science and Applications**, May 2023 (Expected)
Virginia Tech, Blacksburg, VA, Concentration: Computer Systems, Current CGPA: 3.71/4.00
Selected Coursework: Operating Systems, Linux Kernel Programming, Data Structures and Algorithms, Electronic Design Automation, Computer Architecture, Network Architecture and Protocols, Human-Al Interaction, Computer Systems

Bachelor of Science in **Electrical and Electronic Engineering**, February 2017
Bangladesh University of Engineering and Technology, Dhaka, Bangladesh, Concentration: Electronics, CGPA: 3.55/4.00
Selected Coursework: Microprocessor and Interfacing, Numerical Analysis, VLSI, Digital Electronics

EXPERIENCES

Graduate Research Assistant, Virginia Tech, Blacksburg, VA, August 2019 – Current
Leveraging Safety Properties of Rust for Expressible eBPF Programs

- Setting up the kernel infrastructure and designing the user library for loading and running Rust programs in eBPF environment inside the kernel
- Rewriting various eBPF applications in Rust and exploring exploitable weaknesses of eBPF verifier

Efficient Heterogeneous Memory Systems

- Exploring multi-tiered hybrid memory system comprised of DRAM and NVM.
- Memory optimization according to workloads for efficiency and scalability

Workload Migration to FPGA in Heterogeneous Architecture Systems

- Learning the basic FPGA workflow using Xilinx Vivado design suite, SDK and Vitis tools.
- Implementing a hardware system in FPGA and running applications using PetaLinux.
- Working with various benchmark applications for performance comparison among different systems.

Lecturer, Electrical and Electronic Engineering, May 2017 – July 2019
Daffodil International University, Dhaka, Bangladesh

SKILLS

Programming Languages: Advanced: C, C++, Intermediate: Java, Python, Rust, Linux Shell, x86 Assembly, Verilog, C#
Softwares and Tools: Microsoft Office (Word, Excel, Powerpoint), Git, Xilinx Vivado, Vitis, MATLAB, Simulink, CADENCE, PSPICE, Proteus, Arduino, AVR Studio, Visual Studio, Quartus, DSCH, Microwind

PROJECTS

Graduate Level, Virginia Tech
User-defined In-kernel Memory Inspection using eBPF

- Implemented a new eBPF hook to intercept and view swapped memory.
- Implemented a new system call to load programs of the new eBPF program type.

Implementation of ICMP Echo Server and DNS Server using eBPF

- In-kernel ICMP and DNS servers, where the query packets do not have to traverse the entire network stack.
- The responses are formed at the network driver level, saving a huge portion of the latency.

Performance Evaluation of Three Different ISA-Machines

- Comparison among Intel Xeon (x86), Cavium ThunderX (ARM), and SiFive Freedom (RISC-V) processors.
- Evaluated using two benchmarking suites: NAS Parallel Benchmark Suite (v3.3) and SPEC 2017.

Undergraduate Level, Bangladesh University of Engineering and Technology
Design of an 8-bit Computer

- IC level architecture design by Proteus and then realized on breadboard.
- It could run on a clock frequency of 1 kHz, support 64 kB of RAM, and perform 16 instructions.

Design of a Wireless Attendance Recorder

- Embedded project based on Arduino and Bluetooth
- Students' attendances were taken by fingerprint and sent to the course teacher's database.

Design of a 3D Surface Scanner

- Embedded project based on Arduino; ultrasonic sensor was used for vertical dimension.

ACTIVITIES

Organizer of an online gaming tournament based on Fantasy Premier League, 2014-2017
National Level Participant in Bangladesh Mathematics Olympiad, 2008