John Xu

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EDUCATION

Carnegie Mellon University   Pittsburgh, PA
*Master of Science in Electrical and Computer Engineering; **GPA: 3.78/4.00***   *Jan 2023 – Present*
Coursework: Operating System Design and Implementation, Parallel Architecture and Programming, AI Tool Chains, Embedded Systems, Computer Systems, Reliable Distributed Systems

The Pennsylvania State University   University Park, PA
*Bachelor of Science in Computer Engineering; **GPA: 3.88/4.00***   *Aug 2018 – May 2022*
Coursework: Operating Systems, Computer Architecture, Computer Vision, Computer Networks, Wireless Communication, Data Structures and Algorithms, Digital Design Using Field Programmable Devices

SKILLS

Languages: C, C++, Python, Assembly(x86, RISC-V, ARM, MIPS), Java, SystemVerilog, Makefile, Linker scripts, Bash, MATLAB, LaTeX

Frameworks and tools: CUDA, OpenMP, MPI, Linux, FreeRTOS, TensorFlow, Spring boot, Docker, Make, Git, GDB

EXPERIENCE

NXP Semiconductors   Austin, Texas, US
Software Engineering Intern   *May 2023 – Aug 2023*
- Implemented the **Dynamic Voltage Adjust service** in **C++** for the **firmware** of the **RISC-V** power management subsystem (μpower) within the i.MX8ULP SoC and corresponding interface in the **SDK** in **C**.

Tencent Inc.   Shenzhen, Guangdong, China
Software Engineering Intern   *May 2021 – Aug 2021*
- Implemented an **automated testing pipeline** in **Python** using tools including **urllib3** and **requests** to enhance the back-end program of a **Network Intrusion Prevention System** which covers **88%** of testing cases.
- Developed **Python scripts** to assess the synchronization of **packet-blocking** functionality across LANs using **RPC**, and conducted performance testing using **wrk2** and **JMeter**.

PROJECTS | *Full list*

A Preemptive User-Level Thread Library | *Details*
- Developed a user-level thread library in C that offers **POSIX thread-like** interfaces, enables user-space context switching through signal handlers and utilizes **lock-free** queues for maintenance of uthread context data structures

RISC-V OS Kernel Rewrite Based on MIT Xv6 | *Details*
- Comprehended and refactored code related to spin lock, timer, UART, virtual/physical memory management, Platform-Level Interrupt Controller, trap handling, system calls, and process management in the Xv6 kernel.

A Parallel Renderer and Parallel N-Body Simulators
- Developed a CUDA-based parallel renderer capable of generating random circles and snow scenes.
- Implemented parallel n-body simulators based on the Barnes-Hut Algorithm using OpenMP and MPI frameworks.

STM32 Embedded Software Development | *Details*
- Implemented drivers for UART, I2C, keypad, LCD, servo motor, and DC motor on bare metal, along with tasks for keypad input display, servo angle setting, temperature reading with ADC, and motor PID control using FreeRTOS.

RESEARCH

A Microscope Camera System for Producing High-Quality Insect Datasets   University Park, PA
Undergraduate Research Assistant | Microsystems Design Lab, Penn State University   *Jan 2021 – May 2022*
- A camera system implemented using Raspberry Pi, stepper motor, and an electronic microscope to automate the efficient capturing of high-quality insect datasets.
- Publication: Xu, Y. (2022). A Microscope Camera System for Producing High-Quality Insect Datasets.