HongFei Huang

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Skills

- Language/tool: **C/C++, Python, JAVA, Verilog, MATLAB, Git**
- Technique: **Computer Graphics, OOP, Data Structure, OS, RTOS, Scripting, Linux Development**

Projects

Fully Pipelined RISC-V CPU (Verilog | Embedded Design | CPU Pipelining)

Designed a 5-stage RISC-V pipelined CPU with adjustable IMEM and DMEM using **Verilog**, implemented on **Xilinx** Dev Board. Capable of running basic programs such as a bubble sort algorithm. Timing issues were effectively resolved using a **latch**, improving test outcomes.

Asynchronous PNG Concatenation Tool (C | Concurrency | File I/O | cRUL)

Implemented the PNG concatenation tool by pinging to designated servers with **cRUL** API for image retrieval. Concatenated retrieved images with a **multi-threaded** approach, improved the running time by **35%**. Developed under **Linux**

Real-Time Operating System on Kiel Board (C | RTOS | Task Scheduling | Embedded Design[ARM])

Designed and implemented memory allocation with **binary tree**, adopted earliest-deadline-first(EDF) scheduler for task scheduling, the OS is capable of **context switching** in between tasks and handle user input through **UART** with **interrupt**.

Overlapped Triangle Rasterization (C++ | Rasterization | Computer Graphics)

Practiced **rasterization** techniques by visualizing overlapping triangles of diverse colors using the C++ Eigen package and OpenCV libraries. Utilized **z-buffer** comparisons to determine pixel color displays and implemented **Barycentric interpolation** for interpolated z-values.

Experiences

OpenText -- R&D Software Developer   (Jan 2023 - Apr 2023)

- Revitalized and enhanced source code profiling suites through independent research, employing JMeter and Intel Vtune for bottleneck identification via **call maps, stack, and heap** information.
- Developed a TypeScript Visual Studio Code extension compatible with the Eclipse LSP4J **Language Server** protocol, facilitating future CI/CD integration. The extension supports fundamental **IDE features** such as parse tree formation, auto-completion, and syntax highlighting.

OpenText -- Software Developer   (Jan 2022 - Apr 2022)

- Managed the upgrade of all C++ dependency libraries/modules for newly released products on both Windows and **Linux** (RedHat7) platforms after performing a thorough compatibility check.
- Resolved **75%** of compatibility issue, sped up the validation process by **10%** against the deadline

Achievers LLC -- Desktop Support   (May 2021 - Aug 2021)

- Enhanced workflow efficiency by **100%** by scripting multi-process PowerShell scripts related to Active Directory and the Microsoft 365 suite.

Education

University of Waterloo (4-month co-op term)   (2019 - 2024)

- Candidate for Bachelor of Applied Science, co-op **Computer Engineering** student