Wesley Wu

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Education

University of Illinois at Urbana-Champaign Aug 2020 - Dec 2023
Bachelor of Science in Computer Engineering GPA: 3.72/4.00

Relevant Coursework

Computer Organization & Design, Digital Systems Laboratory, Applied Parallel Programming, IC Device Theory and Fabrication, Semiconductor Devices, Digital Signal Processing, Data Structures

Work Experience

Motorola Solutions

Embedded Android Engineer Co-Op *Nov 2022-Current*

- Implemented dump function for fastboot protocol, enabling user to check image in any partition in case of corruption

Android Platform Software Engineering Intern *May 2022-Aug 2022*

Improved bootloader security on Aloha radio (work-in-progress software-defined radio running on Android)

- Devised logic in C to prevent malicious users from reverting to old, vulnerable firmware or modifying vital image data
- Upgraded pre-existing preflash validation in C, ensuring the device doesn't break in fastboot mode or during boot
- Prevented device bricking in bootloader stage, allowing user to recover the device in the case of image data corruption
- Added new AP factory properties, strengthening Sanmina factory flow control to prevent product processing exceptions

Projects

RISC-V Processor | *SystemVerilog, Synopsys VCS* *Aug 2022-Dec 2022*

- Implemented datapath and controller FSM for non-pipelined processor whose ISA is a subset of the RV32I ISA
- Improved the processor's performance by designing and verifying a 2-way set-associative cache
- Performed RTL simulation on the design at each stage of development, using Synopsys Verdi to verify design functionality
- Implemented basic 5-stage in-order pipeline with data forwarding and integration with L1 caches and a cache arbiter

CUDA CNN | *CUDA, NVIDIA Nsight-Systems, NVIDIA Nsight-Compute* *Oct 2022-Dec 2022*

- Implemented forward-pass of convolutional layer of a modified LeNet-5 architecture for hand-written digit recognition
- Parallelized a CPU implementation of forward convolution, observing significant decrease in runtime for all batch sizes
- Further optimized forward convolution kernel with constant memory mask values, tuning, FP16 arithmetic, and streams
- Profiled various combinations of optimizations with NVIDIA Nsight to determine speedup/slowdown of optimizations

FPGA Crossword | *SystemVerilog, C, Altera Quartus, ModelSim* *April 2022-May 2022*

- Implemented a NIOS-II processor on a MAX10 DE10-Lite FGPA board and interfaced it with a custom graphics controller
- Upgraded the graphics controller to draw a game board, a main menu, and a cell highlight
- Devised a state machine to communicate to the graphics controller whether to display the main menu or the game board
- Expanded on-chip memory to load it with the puzzles' clues and answers after serializing them into 8-bit ASCII values
- Leveraged pointer arithmetic in C to read the clues, then parse together and store the clues and answers
- Implemented check and reveal logic in C, and passed win condition back to state machine and stopwatch from C code

IoT Water System | *Python, Git, GitHub* *Jan 2021-May 2021*

- Wrote Python code to display a moving window of continuous, real-time data onto a graph as part of an IoT Water System which measured statistics such as average water usage per week and current rate of water flow
- System was a water sensor connected directly to a Raspberry Pi, which sent the flow rate data of the water source to a server which would display the continually updating plot onto a web app

Activities

IEEE-HKN Alpha Chapter *Dec 2021-Curr*

Member

Help provide student services to the UIUC ECE community, including, but not limited to:

- Administering one-on-one tutoring and leading exam review sessions for core ECE classes
- Conducting resume reviews, mock interviews, and similar career-oriented events

Technical Skills

- **Languages**: SystemVerilog, C, C++, CUDA, Python, Java
- **Software:** ModelSim, Altera Quartus, Synopsys VCS, NVIDIA Nsight-Systems, NVIDIA Nsight-Compute, Arduino IDE
- **Workflow**: Git, GitHub, Gerrit, Jira, Agile