

# Reese Kuper

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**Objective:** Summer of 2022 internship in computer architecture, digital hardware design, or hardware verification

## Education

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**Masters:** University of Illinois at Urbana-Champaign **2021 – 2023 (Expected)**  
Department of Electrical and Computer Engineering  
Focus: Computer Architecture  
Advisor: Nam Sung Kim

**Bachelors:** University of Wisconsin-Madison (3.88/4.00) **2017 - Present**  
Degrees in Computer Engineering and Computer Science

### Related College Coursework

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|---|----------------------------------|-------------------------------------|
| • Parallel Computer Architecture                | • Computer Architecture          | • Digital System Design & Synthesis |
| • Parallel and Throughput-Optimized Programming | • Operating Systems              | • Algorithms                        |
| • Artificial Intelligence                       | • Circuits and Circuits Analysis | • Microprocessor Systems            |
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## Skills

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**Programming Languages:** C/C++, Python  
**Hardware Description Languages:** System Verilog  
**Software:** ModelSim, Icarus, Quartus, Vim, Git  
**Operating Systems:** Linux, MacOS, Windows  
**Databases:** MySQL

## Work Experience

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**Arm – Austin, TX** **Summer 2020**  
Hardware Engineering Internship – Systems Interconnect Verification Team

- Developed internal Python tool to analyze the use of all plusargs within the UVM testbenches
- Fixed UVM register definition auto-generation for more flexible RAL models
- Programmed module for modeling transactions between a master device to interconnect return nodes in SystemC
- Formally verified round robin and LSB priority arbiters using System Verilog assertions

**Qualcomm – San Diego, CA** **Summer 2019**  
Software Engineering Internship – Linux Kernel Memory Team

- Improved kernel ION allocation memory speeds by ~10%
- Analyzed the efficiency of IOVA's use of caching and compared it with MMAP's gap searching RBTree
- Created internal Python tool for parsing Linux RAM dump binaries
- Worked towards shifting mmap allocations to use the mempool API

## Projects

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**Research Projects** **2020 - 2021**  
Research-based projects from either graduate coursework or in a research group

- [Current work] GPU architecture research in Professor Matthew Sinclair's HAL group
- Predicted performance for coherence decoupled systems (directory-based MESI protocol) using a 2-level predictor for *improved* accuracy, and estimated rollback costs for *complete* accuracy using the gem5 architecture simulator

**Computer Science and Engineering Projects** **2018 - 2020**  
Projects created through computer science and engineering courses

- Self-balancing Segway written in Verilog for a DE0-Nano FPGA board
- Synthesized 5-stage pipelined CPU with separate, 2-way set associative Instruction and Data Caches (using an LRU replacement policy) written in Verilog

**Hackathons (HackNYU and HackMobile)** **2018 - 2019**  
48- and 24-hour coding project competitions

- Developed a mobile iOS application for animal photo recognition using Microsoft's Custom Vision API
- Wrote an Android app that sends dense packets of information to proactively track lost people (connection-free)