

Logan Cudia

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EDUCATION

University of Illinois Urbana-Champaign

Expected Graduation: May 2025

Bachelor of Science in Computer Engineering

GPA: 3.30

Relevant Coursework: *Computer Organization and Design, Computer Systems Engineering, Digital Systems Laboratory, Data Structures and Algorithms, IoT and Cognitive Computing, Applied Parallel Programming*

EXPERIENCE

Northrop Grumman

May 2023 – Aug 2023

Hardware Electronics Engineer Intern

- Verified voltage sequencing for a missile detection interface CCA to fit military standard sequence timing
- Supported design and verification process of a linear amplifier converter for small motor control
- Performed plot testing on a highspeed optical transceiver module to show degree of signal power loss
- Assisted creating Interface Control Documents (ICD) and Material Workbooks for various programs

Illini EV Concept

Aug 2022 – Feb 2023

Embedded Software Engineer

- Pioneered the team's first Tachometer PCB with a STM32 microcontroller, IR sensor, and CAN transceiver to track the RPM of the wheels
- Utilized C++ to detect a triggered pulse, calculate the RPM, and send to display module via CANBus
- Aided electrical and mechanical team to integrate PCB into the car's infotainment system

PROJECTS

Linux-Like Operating System

Oct 2023 – Present

- Developed a 32-bit Linux-based kernel using C & x86 Assembly, incorporating advanced features like memory-mapping, paging, virtualization, and hardware interrupts
- Implemented a Round-Robin scheduler supporting three terminals and up to 10 concurrent processes, with emphasis on system calls, kernel privileges, and software context switching
- Authored device drivers for keyboard, mouse, and real-time clock while creating an interactive user shell

UIUC Adventure with Tux Controller

Sept 2023 – Oct 2023

- Upgraded a UIUC campus adventure game with additional graphical features and a serial port Tux device
- Modeled a multithreaded program using a Posix mutex to handle game logic and synchronize keyboard and a customized made tux controller device
- Organized memory-mapped virtual memory to physical memory for VGA display

Text-Mode Missile Command

Aug 2023 – Sept 2023

- Created a text mode version of classic arcade video game, Missile Command, in x86 assembly and extended to the Linux real-time clock (RTC) driver
- Designed a kernel tasklet that updates the game and missiles in real time on each RTC interrupt
- Interfaced 5 ioctl functions to manage Kernel/User interactions and communications

IoT Security System

Apr 2023 - May 2023

- Designed an IoT security network using AWS IoT core and MQTT protocol to establish communication between Raspberry Pi edge nodes, user's mobile device, and NVIDIA Jetson Nano sink node
- Implemented facial recognition and object detection models using Inception ResNet and EfficientNet architectures on Raspberry Pi's
- Accelerated real-time identity verification by cross-referencing detected identities with an AWS SQL server database

SKILLS/INTERESTS

- **Frameworks/Libraries:** TensorFlow, TFLite, OpenCV, NumPy, SciPy, Keras, React
- **Languages:** C++, C, SystemVerilog, Verilog, Python, x86 Assembly, CUDA, HTML, CSS, JavaScript
- **Technologies:** Docker, Git, Raspberry Pi, Linux Systems, Cadence Design Systems, LTSpice, GDB
- **Interests:** Basketball, Powerlifting, Formula 1 Racing, Traveling, Violin, Cooking