Mahmoud Elsharawy

(929)-461-9837 • mse63@cornell.edu
https://mse63.github.io

EDUCATION

Cornell University **Ithaca, NY**
B.S. in Electrical and Computer Engineering, B.S. in Computer Science (GPA - 3.8) *Graduation: December 2024*

Relevant Coursework

Operating Systems
Computer Architecture
Digital System Design Using Microcontrollers
Machine Learning

Skills

Programming Languages: Rust, Java, Bash, Python, C/C++

Software: Linux, LTspice, Cadence, KiCAD, Altium, Mentor Designer/Layout, Quartus

Hardware: Raspberry Pi, Arduino, FPGA Boards, Verilog

EXPERIENCE

Apple **Cupertino, CA**
iPad System EE Intern *Jan 2023 - Aug 2023*

- Designed and tested a buck converter power module for use on internal dev boards, removing reliance on a vendor's power modules, preventing future supply chain issues and reducing cost
- Designed a PCBA to calibrate the ADC of a SAMD21 microcontroller, and programmed it using C++ to act as a micro-current load to precisely characterize power components
- Created prototype analog and RF circuits for future development
- Coordinated with a Product Design Engineer, DFM, and PCB Designer to design flexible PCBAs for prototypes

SpaceX **Hawthorne, CA**
Starlink Engineering Intern *Jan 2022 - Aug 2022*

- Anchored User Terminal Power Budget over temperature and operating mode by automating thermal chamber data collection through SCPI commands, informing thermal team of shortcomings and improving field predictions
- Automated an assembly line station through mechanical design and PLC TwinCAT software, tripling its speed and preventing a production bottleneck
- Tested and qualified alternative integrated circuits for Business User Terminals, preventing a parts shortage
- Designed a dev PCBA to test various potential fixes for acoustic noise from user terminals

Cornell University Unmanned Air Systems **Ithaca, NY**
Electrical Team Member *Fall 2022*

- Designed a PCB using an ESP32-S2 microcontroller to interface with a camera over a DVP or USB protocol and save footage to an SD card

PROJECTS

Chess AI *Summer 2021*

- Developed a UCI Chess AI from scratch in Rust using a minimax algorithm with variable depth and time control
- Hosted a systemd service to interact with lichess.com's API, allowing the AI to play against other bots and humans, earning an Elo rating of 1700, making it stronger than 70% of human players on the website

Servo Controller *Summer 2021*

- Modified servos to provide an analog feedback signal of their position by accessing the potentiometer within it
- Designed and created an Op-Amp circuit which generates a pulse width modulation (PWM) signal, controlling the position of a servo to match that of another servo by implementing an analog feedback loop to adjust the signal

Automatic Plant Waterer *Summer 2020*

- Designed and built 3D-Printed automatic plant watering machine with Fusion 360, housing a mint plant and a water supply
- Implemented an Arduino to detect when the soil is too dry and use a peristaltic pump to water the plant when necessary