John Julian Martinez

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In search of a Software, Hardware, or Electrical Engineering internship for Summer 2023

EDUCATION

Cornell University, NY **Expected Graduation Spring 2025**

- **Anticipated Dual Major:** Electrical and Computer Engineering | Computer Science
- **Courses:** Digital Logic and Computer Organization, Object-Oriented Programming and Data Structures, Physics II: Electromagnetism, Introduction to Circuits for Electrical and Computer Engineers, The Computing Technology Inside Your Smartphone, Introduction to Computing Using Python, Differential Equations, Data Science for Engineers, Embedded Systems, Intro to Microelectronics, Linear Algebra, Physics: III-Oscillation, Waves & Quantum Physics.

Island Trees High School Levittown, NY **June 2021**

- GPA: 97.8 % | 107.55% (Weighted) Rank: 3/223

ENGINEERING EXPERIENCE / PROJECTS

Enhanced AI using Transposition Table **November 2022**

- Created a Transposition Table for an AI using a hashmap in order to improve its performance playing Pente.
- Implemented all Pente logic such as removing pieces from the board, keeping track of the score, etc in Java.
- A hashmap implementation of the table was desirable due to the data structure's constant lookup time.

Cornell Aerial Robotics | ECE Subteam **October 2022-Present**

- Design a fully autonomous drone to compete in the International Aerial Robotics Competition.
- Implement functionality on the drone using a Raspberry Pi running Ubuntu and Arduino microcontrollers.
- Currently designing a kill switch for the drone utilizing two N-type MOSFET transistors.

BigRed//Hacks Environmental Sustainability Hackathon **October 2022**

- Created an app that calculates the total power a user saves by doing specific actions.
- Used Kivy framework to create a custom GUI and UI.

Vacuum Tube Guitar Amp **October 2022**

- Currently creating a 2W guitar amp using vacuum tubes and other electrical components.
- Implementation utilizes capacitors and diodes to rectify AC current to DC.

FPGA Single Cycle Processor **April 2022**

- Designed a single-cycle processor from scratch on an FPGA board (excluding register and RAM).
- Created Decoder, ALU, PC Increment logic, PC Select logic, and Halt logic modules.
- Capable of decoding assembly instructions and executing 1 of 15 instructions per clock cycle.
- Utilized Altera ModelSim to debug and test processor by examining outputted binary values and waveforms.

RFID Raspberry Pi Reader/Writer **April 2022**

- Constructed a computer capable of reading and writing RFID cards/fobs.
- Implemented hardware allowing compatibility with 125 kHz and 13.56 MHz cards.

FPGA Reaction Time Game **March 2022**

- Built a reaction time game on a field-programmable gate array.
- Implemented logic with a 6-input, 15-state FSM.

LEADERSHIP EXPERIENCE

Society for Hispanic Professional Engineers | Corporate Board **April 2022 - Present**

- Provide opportunities for the Hispanic engineering community at Cornell.
- Communicate directly with company representatives to organize events and manage partnerships.

Institute of Electrical and Electronics Engineers (IEEE) | Corporate Director **February 2022 - Present**

- Distribute and revise student resumes.
- Organize events such as Professor v. Student Trivia and ECE Formal.

RELEVANT SKILLS

- Proficient in Java, Python, HTML, CSS, and Verilog.
- Programs: Quartus, Atom Editor, Jupyter Notebook, PyCharm, LTspice, and Intellij Idea.
- Experience using an Oscilloscope, SMU, and other relevant technologies.
- Experience with Kali Linux, Raspbian (Debian Linux), and VirtualBox.
- Familiarity with processor design & architecture as well as circuit design.
- Experience with GUI design in both Java and Python using Kivy and Swing.