Nadra-Claire Assad

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Education

University of Houston **Aug. 2023–May 2027**
Bachelor of Science in Electrical and Computer Engineering *Houston, Texas*

- **Academic Excellence Scholarship** — Awarded $2,000/year for outstanding academic performance.

Relevant Coursework

- Electronics
- Signals and Systems
- Applied Electromagnetics
- Digital Logic Design
- Programming Applications
- Differential Equations

Experience

Children's Museum Houston | *Soldering, TinkerCAD, 3D printing* **May–August 2024**
ExxonMobil Summer STEM Intern *Houston, Texas*

- Assisted in leading electronics and 3D-printing workshops requiring soldering PCB boards and debugging Arduinos.
- Built physics exhibits, including a large lemon-powered battery array that powered a handheld game console.
- Proposed new electricity and magnetism activities and researched devices for future STEM workshops.

Projects

USB-C LED Keychain PCB | *KiCad, PCB Layout* **Sep 2025**

- Designed a compact PCB with a USB-C connector powering an onboard LED, including schematic capture, footprint assignment, and basic trace routing in KiCad.

Three Octave Electric Keyboard with Metronome and Note Display | *Arduino, ESP32, UART* **Sep–Nov 2025**

- Designed and built a three-octave keyboard with accurate tone generation, octave switching, and RGB TFT screen note display.
- Implemented sustain and soften pedal functions, adjustable volume control, and precise 0.5s/0.25s note timing.
- Created a BPM-adjustable metronome with a potentiometer interface and integrated real-time BPM display.
- Implemented a 115200-baud UART interface between Arduino and ESP32-S3, with voltage level shifting and real-time note data rendering on the TFT display.

Battery Internal Resistance Measurement | *Circuit Analysis, Instrumentation* **Sep 2023–May 2024**

- Measured internal resistance of four AA batteries using a $1\,\Omega$ load and recorded voltage and current.
- Used an Agilent 34405A $5\,\frac{1}{2}$-digit multimeter to collect open-circuit and load-voltage data for each battery.
- Compared internal resistance of alkaline and lithium-ion batteries by analyzing their Thevenin equivalent behavior.

Impact of Extreme Temperature Cooling on Semiconductor Wavelength Emission | *Arduino* **Mar–May 2023**

- Developed and presented a poster on semiconductor wavelength emission to Harvard and MIT PhD students.
- Built and operated a custom Arduino-driven red-laser setup and submerged LEDs in liquid nitrogen for testing.
- Analyzed wavelength shifts, observing major color changes in warm-tone LEDs while cool-tone LEDs remained stable.

Technical Skills

Programming: Python, C
Hardware/Tools: Arduino, KiCad, Oscilloscopes, DMMs, Soldering, UART Protocol
Software: VS Code, MATLAB, AutoCAD, Tinkercad, LaTeX

Extracurricular

Society of Women Engineers (SWE) **Fall 2023–Present**
Member *University of Houston*

Institute of Electrical and Electronics Engineers (IEEE) **Fall 2023–Present**
Member *University of Houston*