

# Tessa Urwin

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## Education

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**The University of Illinois at Chicago** | Master of Science, Electrical and Computer Engineering | GPA: 3.5 May 2027

- Technical Core - Digital Systems and VLSI
  - Relevant Coursework: Digital Systems Design, Advanced VLSI Design, Parallel Processing, HDL Based Digital and Computer System Design

**The University of Texas at Austin** | Bachelor of Science, Electrical and Computer Engineering | GPA: 3.0 May 2024

- Technical Core - Computer Architecture and Embedded Systems
  - Relevant Coursework: Embedded Systems Design Lab, Computer Architecture, Algorithms, Software Design, Data Science Lab, Digital Logic Design, Digital System Design Using HDL, Digital Signal Processing Lab, Mechatronics

## Skills

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**Languages & Digital Design:** C, C++, Python, SystemVerilog, Verilog, Assembly, MATLAB, Bash

**Embedded & Software Tools:** Linux, Git/GitHub, Keil, VS Code, ARM Cortex-M, STM32, ESP32, Arduino

**Hardware, ASIC & EDA Tools:** Vivado, ModelSim, Cadence, HSPICE, KiCAD, LTSpice, AutoCAD

**Hardware Testing & Verification:** RTL simulation, testbenches, timing analysis, oscilloscopes, logic analyzers, PCB design & layout

## Relevant Projects

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**Temperature Sensor for Veterans with Paralysis**, *First Place Capstone Senior Design Industry Project Award*

- Developed a wearable temperature-sensing device in partnership with Adaptive Adventures and BAE Systems to enable real-time body temperature monitoring for paralyzed veterans.
- Led all hardware-based embedded systems efforts, including schematic capture, PCB design, and circuit development using KiCAD.

**Stack Calculator Using Memory Module on FPGA**

- Designed RTL architecture using Verilog, implementing ALU, memory controller, I/O modules, and on-chip block RAM.
- Developed synthesizable IP blocks, integrated them into a full datapath, and evaluated control logic and memory access behavior.
- Verified functionality through RTL simulation and testbenches, checking timing behavior, corner cases, and overall system validity.

**Capacitive Touch Harp**

- Designed a custom PCB in KiCAD using a TI TM4C microcontroller and implemented embedded firmware in C using Keil.
- Developed capacitive touch sensing algorithms and validated performance with structured testing, signal inspection & noise analysis.
- Implemented UART communication and debugged functional and signal-level issues using oscilloscopes and logic analyzers.

## Experience

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**Embedded Systems Engineer**, Paradigm Robotics – Austin, TX February 2023 – May 2024

- Led development and optimization of critical electrical subsystems including environmental sensing, audio-visual communication, and robot propulsion through custom electrical system design, and implementation of control software using Python and C++.
- Developed hardware for sensors and microcontrollers to operate flagship product "FireBot" reliably in high-temperature environments (up to 650 °C), conducting schematic capture and PCB layout for multi-layer circuit boards using KiCAD.
- Debugged embedded systems and hardware using oscilloscopes and logic analyzers to ensure robustness.

**Electrical Engineering Intern**, Oncor Electric Delivery – Dallas, TX May 2022 – August 2022

- Wrote and executed SQL queries for data analysis within the Reporting and Compliance group.
- Coauthored a project charter for the development of an API to streamline data from Oracle's RightNow to Oncor applications.

**Software Engineering Intern**, Webev – Spring, TX May 2021 – August 2021

- Employed Python and HTML to create and maintain website functionalities for the Illinois Kids Wrestling Federation website.
- Delivered technical support, automated essential tasks, and streamlined feature updates to enhance website reliability.