ISABELLA NICOLE ZAENS

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EDUCATION

The University of Texas at Austin — Austin, TX
B.S. Electrical and Computer Engineering — *Aug 2022 - May 2026*

COURSEWORK

Spring 2025: Embedded Systems Design Lab, Data Science Lab
*Fall 2025:*VLSI (graduate level), Tactile Sensing for Robotics (graduate level), Senior Design
Relevant: Computer Architecture, Embedded Systems, Algorithms, Electronic Circuits, Digital Logic Design, Linear Systems and Signals, Probability & Random Processes, Vector Calculus, Discrete Math

EXPERIENCE

Texas Instruments | Dallas, TX — *May 2025 - Aug 2025*
Incoming Product Engineering Intern

Advanced Micro Devices (AMD) | Austin, TX — *May 2024 - Aug 2024*
GPU System Validation Intern
• Performed system-level validation of Radeon GPUs on ATE-93K, executing production and characterization test flows
• Debugged silicon and characterized performance metrics and process variation across various test conditions
• Automated test flows and release notes generation using Bash, Python, Java, and Gradle, reducing manual workload
• Set up DUTs and independently ran system-level tests to support debug and accelerate validation timelines

Rehabilitation and Neuromuscular (ReNeu) Robotics Lab | Austin, TX — *Sept 2023 - Aug 2024*
Undergraduate Research Assistant
• Researched and developed embedded software for an EMG-driven hand exoskeleton to assist spinal cord injury patients
• Optimized EMG data acquisition using C++, EtherCAT, ESI and SOEM, enabling real-time signal processing
• Integrated advanced hardware and software to improve exoskeleton performance based on research findings
• Created wiring diagrams and documentation for integration, delivered to Sony Japan for next-generation exoskeleton

PROJECTS

LC-3b Microarchitecture Level Simulator
• Built a cycle simulator for the LC-3b microarchitecture using C and LC-3b assembly
• Implemented arithmetic and logic operations, branching, and exception handling (unaligned access, protection fault, etc.)
• Designed a microsequencer to drive the state machine, supporting little endian memory and instruction decoding
• Added virtual memory via a one-level page table and modified the datapath and control logic to support pipelining

Cylindrical Volumetric Display
• Developed a spinning addressable LED display with 36 pairs of DMA-driven NeoPixels mounted to a custom fan blade
• Enabled Wi-Fi communication between rotating and stationary units using TM4Cs and ESP8266 modules
• Designed power circuitry, custom PCBs, and CAD enclosures; fabricated enclosures using 3D printing and laser cutting

ML Binary Classification Model
• Developed and optimized a LightGBM model for binary classification, using Optuna to refine hyperparameters
• Implemented cross-validation with StratifiedKFold to assess model stability, using ROC AUC as the performance metric
• Used parallel processing to accelerate model training, achieving 11th place out of 104 in the Kaggle competition

SKILLS

Software: Java, Python, C/C++, Verilog, ARM Assembly, HTML/CSS, Javascript, Tableau, Matlab, SQL, R
Hardware: Signal Generators, Oscilloscopes, Spectrum Analyzers, Microcontrollers, PCB Design
Tools: Linux, Git, VSCode, Keil, Vivado, KiCAD, LTSpice, Fusion360, AutoCAD
Certifications: Google Data Analytics, IBM AI Fundamentals