

Yiting(Jerry) Jin

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EDUCATION

Cornell University, College of Engineering

Master of Engineering in Electrical and Computer Engineering

08/2023 - present

Bachelor of Science in Electrical and Computer Engineering

08/2019 - 05/2023

HONORS

Cornell Town-Gown Award

2022

McManus Design Award

2022

PROJECT EXPERIENCE

FPGA Power Estimator ([Link](#))

2023

- ❖ Interfaced a current sensor with Altera DE1 SoC to calculate current, dynamic power, and average power for an FPGA
- ❖ Implemented I2C protocol in Verilog to allow communication between current sensor and FPGA
- ❖ Designed and implemented user interface for serial monitor and graphed data on a VGA screen
- ❖ Determined and compared dynamic power of an FPGA with and without the ethernet cable connected

Superscalar Processor

2023

- ❖ Designed and implemented a dual-issue 5-stage superscalar processor capable of sending different instructions into corresponding instruction pipe
- ❖ Quantitatively evaluated area, energy, and cycle time changes at different stages of the design and compared with a baseline single-issue pipelined processor with data from ASIC design flow using Synopsys DC and Cadence Innovus
- ❖ Created various microbenchmarks with realistic sequences of instruction to address different aspect of the processor performance

IoT Food Cabinet ([Link](#))

2022

- ❖ Designed and built a solar-powered smart cabinet that monitors food refill requirement to better address food insecurity in Tompkins County
- ❖ Led an electrical team to tackle the challenge of low power budget and long-distance communication by implementing a LoRaWAN wireless system
- ❖ Developed software to read, process and upload data to Slack through an IOT cloud solution

Cricket Chirp Synthesis and Synchronization ([Link](#))

2022

- ❖ Implemented Direct-Digital-Synthesis algorithm and self-defined state machine to synthesize the chirping frequency of crickets
- ❖ Exploited DMA channels on RP2040 microcontroller to output voltage signals to DAC to synthesize cricket chirping sound
- ❖ Implemented FFT to identify chirping sound from other sources and used an integrate-and-fire oscillator to achieve synchronization between multiple sound sources

Arduino Robot Car ([Link](#))

2021

- ❖ Collaborated with a teammate to build a robot car that self-navigates around a random maze using a right-wall-following algorithm and performs RF communication with a base station
- ❖ Implemented a function that activates the robot upon detection of certain sound frequencies using FFT
- ❖ Built an Arduino system with a suit of phototransistors, ultrasonic sensors and RF transceiver to detect and report IR LED frequencies and obstacles in the maze
- ❖ Implemented PID algorithm by changing right servo speed based on distance to right wall to allow self-adjustment of robot when deviation occurs

SKILLS

Programming Language: Verilog, Java, Python, C, C++, MATLAB, Assembly

Tools/Framework: Robot Operating System, Arduino, Raspberry Pi, FPGA, Cadence Virtuoso

COURSES:

Software: Python, Object-oriented programming and data structures, Machine learning, Computer networks and telecommunications, High level digital design automation

Hardware: Advance microcontroller design and SoC, ASIC, VLSI, Computer architecture, Digital logic and computer organization, Fundamental of robotics, Embedded systems, Microelectronics, IoT, Circuits