Yatian Liu

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A senior undergraduate student fascinated by embedded systems and human-computer interaction. Looking forward to applying my knowledge and experience in computing and embedded systems to hardware-related human-computer interaction research.

Education

University of Michigan, Ann Arbor — **Ann Arbor, US**
BSE, Computer Engineering, GPA: 3.957/4.000 — *Sept. 2019 – present*

UM-SJTU Joint Institute — **Shanghai, China**
BSE, Electrical and Computer Engineering, GPA: 3.838/4.000 — *Sept. 2017 – Aug. 2019*
(Transferred to the University of Michigan since Sept. 2019.)

- Have concrete embedded systems knowledge such as memory-mapped IO, buses, interrupts, real-time operating systems, and device drivers. Got an A+ to an introductory embedded systems course and currently taking an advanced embedded systems design course as graduation project.
- Implemented common data structures and algorithms using C++ in an algorithm course. Familiar with the C++ STL.
- TOEFL score: 112. GRE General Test score: 163 Verbal, 170 Quantitative, 4.0 Analytical Writing.

Research and Course Projects

PDM-to-PCM Signal Conversion for Microphone Arrays (Research Project, Advisor: Prof. Alanson Sample and Kevin Fu)
- Built a PDM-to-PCM signal conversion system on an Intel Arria V FPGA
- Implemented CIC and FIR filters to convert PDM signals from microphones to PCM signals
- Implemented a subsystem to transmit the PCM signals to a computer via Ethernet
- Working on testing the system on a larger array and applying it in human activity sensing

Low-Power Wireless Information Display (Group Graduation Project)
- Built a low-power wireless information display based on E Ink display and ESP32 microcontroller
- Powered the display using solar cells and PMICs to avoid AC power deployment
- Wrote an Android app for users to send text or images to the display through Wi-Fi
- Converted 24-bit RGB images to 1-bit grayscale images for E Ink display using Floyd-Steinberg dithering
- Minimized power consumption with event-driven scheduling, low duty cycle, and self-designed PCB

Light-Tracing Robot Car (Course Project)
- Built a light-tracing robot car based on STM32 microcontroller
- Used an ultrasonic sensor to detect obstacles and a light sensor to find light source
- Mounted sensors on a servo for sweep scanning
- Designed and implemented a state machine for finding and tracing light sources

Awards

University of Michigan
College of Engineering Dean's Honor List — *Dec. 31st, 2019*

UM-SJTU Joint Institute
Undergraduate Excellence Scholarship — *Nov. 16th, 2018*

UM-SJTU Joint Institute
John Wu & Jane Sun Talent Scholarship of SJTU — *Sept. 18th, 2017*

Social Experiences

Slauson Middle School — **Ann Arbor, US**
Student tutor for mathematics — *Oct. 2019 – Mar. 2020*

Jiangchuan Sunshine Home — **Shanghai, China**
Care worker for people with intellectual disability — *Mar. 2019 – May 2019*