Yatian Liu

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A master's student fascinated by embedded systems and human-computer interaction. Looking forward to applying my knowledge and experience to HCI-related hardware fields and general embedded systems development.

Education

University of Michigan — **Ann Arbor, US**
MSE, Computer Science and Engineering — *Sept. 2021 – Apr. 2023 (anticipated)*

University of Michigan — **Ann Arbor, US**
BSE, Computer Engineering, GPA: 3.879/4.000 (Summa Cum Laude) — *Sept. 2019 – Apr. 2021*

Shanghai Jiao Tong University — **Shanghai, China**
BSE, Electrical and Computer Engineering, GPA: 3.800/4.000 — *Sept. 2017 – Aug. 2021*

Notable courses taken and currently taking

- Real-time Embedded Systems
- Intro to Operating Systems
- Advanced Embedded Systems
- Computer Networks

Work Experiences

Shanghai Jiao Tong University — **Shanghai, China**
Teaching Assistant of VG 101 (a freshman-level course on computing taught in English) — *May 2021 – Aug. 2021*

Research and Course Projects

Signal Processing for Microphone Arrays (Research Project, Advisor: Prof. Alanson Sample and Kevin Fu)

- Designed CIC and FIR filters on an Intel FPGA to convert PDM signals from microphones to PCM signals
- Stored the PCM signals from FPGA in a memory buffer and used C to read the data in an ARM core using MMIO
- Designed and built a PCB with 49 PDM microphones and a proprietary Intel FPGA connector
- Transmitted data from ARM core to host computer through Ethernet TCP packets, using C and Python code
- Experimenting on processing the sample data for beamforming, sound source localization, etc.

Low-Power Wireless Information Display (Graduation Group Project)

- Ported C driver of an SPI-based E Ink display from Arduino to the ESP32 SoC platform
- Powered the display using solar cells, backup batteries, and PMICs to avoid AC power deployment
- Designed and built custom PCB and selected parts by reading and comparing datasheets
- Wrote an Android app for users to send text or images to the display through WiFi and Firebase database

Ultrasound-based Driver Behavior Monitor (Course Project)

- Generated beamformed 40 kHz ultrasonic waves using Teensy 3.6 PDB and LUT
- Received reflected waves using transducers and ADC, utilizing DMA to achieve fast sampling rate for two ADCs
- Designed and built op-amp based inverting amplifiers to amplify received signal
- Predicted driver's head orientation using SVM and random forest

Awards

University of Michigan — **Ann Arbor, US**
James B. Angell Scholar — *Mar. 31st, 2021*

University of Michigan — **Ann Arbor, US**
College of Engineering Dean's List — *Dec. 31st, 2019 and 2020*

Technical Skills

- Programming languages: C/C++, Verilog HDL, ARM UAL, Java, Python, Scheme, MATLAB, Arduino, LaTeX.
- Software experiences: Linux command-line tools, Git, FreeRTOS, Visual Studio Code, Altium Designer, MATLAB, Android Studio, Xilinx Vivado Design Suite, Intel Quartus Prime, Onshape, Adobe Creative Cloud.