

Yatian Liu

+1 (734) 272-5269 • dougliu@umich.edu • yatian-liu.github.io • yatliu

A master's student fascinated by embedded systems and human-computer interaction. Looking forward to applying my knowledge to HCI-related hardware industries such as consumer electronics and general embedded systems development.

Education

University of Michigan

MSE, Computer Science and Engineering, GPA: 3.663/4.000

Ann Arbor, US
Sept. 2021 – Apr. 2023

University of Michigan

BSE, Computer Engineering, GPA: 3.879/4.000 (Summa Cum Laude)
(Dual Degree Program)

Ann Arbor, US
Sept. 2019 – Apr. 2021

Shanghai Jiao Tong University

BSE, Electrical and Computer Engineering, GPA: 3.800/4.000

Shanghai, China
Sept. 2017 – Aug. 2021

Notable coursework: Real-time Embedded Systems, Advanced Embedded Systems, Intro to Operating Systems, Distributed Systems, Computer Architecture.

Experiences

Signal Processing for Ultrasonic Microphone Arrays (Research Project)

Jun. 2020 – Present

- Designed and built a PCB with a 7x7 square PDM microphone array and a custom connector using Altium
- Designed CIC and FIR filters on an Intel FPGA to convert PDM mic signals to 16-bit/96kHz PCM signals
- Wrote C code to read data from FPGA and send data out via Ethernet with real-time performance
- Experimenting on direction-of-arrival estimation, source separation, and activity recognition

Ultrasound-based Driver Behavior Monitor (Course Project)

Oct. 2021 – Dec. 2021

- Wrote C++ code to generate beamformed 40 kHz ultrasonic waves using Teensy 3.6 PDB and LUT
- Utilized DMA to achieve fast sampling rate for two ADCs and precise timing control
- Designed and built op-amp based inverting amplifiers to amplify received signal from ADC
- Predicted driver's head orientation using SVM and random forest, achieving 80% cross-user accuracy for pilot study

Teaching Assistant at Shanghai Jiao Tong University (Paid Work)

May 2021 – Aug. 2021

- Assisted in a freshman level course on computing basics and MATLAB, C, and C++ programming
- Designed lab contents, instructed lab sessions, and held office hours in collaboration with two other TAs
- Set up online judge for programming assignments and graded assignments and exams

Low-Power Wireless Information Display (Course Project)

Sept. 2020 – Dec. 2020

- Ported C driver of an SPI-based E Ink display from Arduino to the ESP32 SoC platform
- Designed and built custom PCB using EAGLE and selected parts by reading and comparing datasheets
- Managed project timeline using Trello and kept each group member's progress
- Wrote an Android app for users to send text or images to the display through WiFi and Firebase database

Technical Skills

- Programming languages: C/C++, Verilog HDL/SystemVerilog, Java, Python, MATLAB, Scheme, 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, Adobe Creative Cloud.

Awards

University of Michigan

James B. Angell Scholar

Ann Arbor, US

Mar. 31st, 2021