Zhe Liu

2875 Crescent Pkwy Apt. 1448
Atlanta, GA 30339
(540) 998-0985
zliu796@gatech.edu

EDUCATION

Georgia Tech, Atlanta GA Expected May 2022

- Master of Science in Electrical Engineering GPA: 3.60/4.0

Virginia Tech, Blacksburg VA August 2016 - May 2020

- Bachelor of Science in Electrical Engineering In major GPA: 3.62/4.0 | Dean's List 6/8 semesters

RELATED COURSEWORK

Analog & IC Design: Analog Electronics; Analog Integrate System Design; Physical Design Automation of VLSI Systems.

Control & Robotics: Intro to Control System; Principles of Robotics System.

Signal Processing: Signal and Systems; Discrete Time Signal System Theory; Digital Image Processing.

Biomedical: Biomedical Sensing Systems; Biomedical Applications of MEMS; Medical Image Processing.

CORE QUALIFICATIONS

- Basic PCB design using: Cadence Allegro.
- Hardware: Arduino, TI-MSP432, Op-amps, Oscilloscopes, Power Supplies, and Multimeters.
- Computer programming languages: C, C++, Java, Python, and MATLAB.
- Circuit design and simulation: Cadence Virtuoso, and LTSpice.
- Engineering modeling: Autodesk Inventor.
- Communication: Technical reports, Project proposal, Presentation slides.

RELEVANT EXPERIENCES

12-bit Pipelined SAR ADC Design Atlanta, GA

Analog System Design Class Project January 2021 – May 2021

- Designed a two-stage 12-bit differential Pipelined SAR ADC using Vcm based switching technique. Implemented the strong-arm, the NMOS/PMOS/CMOS/Bootstrap switch, and SAR logic/D flip-flop by real transistors.
- Customized two-stage clock design. Achieved sampling frequency at 31.5 MHz and ENOB of 12.68 with SNDR of 78.1519 dB. The total power consumption is 2.612 mW with FoM of 13.737 fJ/conversion-step.

Vertically Integrated Project – Infant Health Global Solutions Atlanta, GA

Electrical Sub-team Leader, Member of FetoMic Team August 2020 – December 2020

- Led electrical sub-team to design a durable, inexpensive, and accurate fetal heart monitoring device for Ethiopian health care facilities.
- Improved the circuit performance of audio signal acquisition by utilizing 5^{th} order Bessel low pass and high pass filter.
- Achieved higher SNR by adjusting the close-loop gain on a test rig.

Recognition in Images: Improving the result of a "Traffic Sign Recognition" algorithm Atlanta, GA

Student Researcher August 2020 – December 2020

- Developed several image pre-processing techniques based on Python including histogram equalization and contrast enhancement. Pre-processing methods are applied to normalized input images for a better training.
- Implemented an anti-blur algorithm using Wiener Filter to recover motion blurred images.
- Improved the detection accuracy for motion blurred traffic signs from 40.672% to 68.776% without changing CNN structure.

Major Design Experience – IEEE Hardware Competition Blacksburg, VA

Member of IEEE SoutheastCon Hardware Robotics Competition Team August 2019 – May 2020

- Drafted, designed, and built a fully autonomous robot. Followed by IEEE competition rules, the robot is able to press buttons in the sequence of Pi.
- Implemented chassis structure to achieve robot movement in horizontal direction. Omni wheels were used. PID control algorithm was tested.
- Refined power delivery system. Used DC-DC converters to regulate voltage and achieve better energy usage. Deployed two Li-Po batteries to separate Arduino control system with powertrain to minimize noises.