Sizhe Zhang

sz592@cornell.edu

+1 716-536-2455

Education

Cornell University	Master of Engineering in Electrical and Computer Engineering GPA:3.49/4.00	*Ithaca, NY* *2019-2020*
University at Buffalo, the State University of New York	Bachelor of Science in Electrical Engineering GPA:3.74/4.00 Degree Honors: Magna Cum Laude Dean's List: Spring 2015, Spring 2018, Fall 2018	*Buffalo, NY* *2014-2019*

Relevant Coursework: Embedded Operating Systems, Computer System Programming, Fundamentals Machine Learning, Intro to Pattern Recognition, Big Data Analytics, Computer Architecture, HDL Based Digital Design with Programmable Logic, Intro VLSI Electronics, Intro to Parallel computing

Academic Projects

Vending System Based on Object Detection Neural Networks   *Cornell University*
- Designed and implemented an embedded system (based on Raspberry Pi 4) to upgrade a basic cooler into a vending machine system for PepsiCo.
- Built a data collection platform to collect goods imagines and automate label and box the object. Training an object detection neural network by using red cloud services.
- Combined a custom-trained object detection model with a pre-trained model (running on Google Coral TPU accelerator) and improved the detection accuracy and system performance.

Raspberry Pi Autonomous Guitar Tuner   *Cornell University*
- 3D print a special holder combined with a motor to adjust guitar knob.
- Implemented a special loudness and frequency filter algorithm to autonomous turn the guitar.

Neural Network Parallel Computing by CUDA   *Cornell University*
- Design and implemented a basic neural network for handwritten classification by using CUDA for GPU parallel computing both for inference and training.

Quad-Core RISC-V Processor Design   *Cornell University*
- Designed and implemented a five-stage quad-core RISC-V processor.
- By using special python library Pymtl tested and benchmarked with sorting algorithm based on C.

Communication Signal Modulation Prediction (Kaggle in-class Competition)   *Cornell University*
- Build customized CNN by using Tensor flow to predict different modulation signal.

Melamine Detection Portable System   *University at Buffalo Nano-optics & Biophotonics Lab*
- Implemented a low-cost paper centrifuge with speed up to 8000rpm. By using the centrifuge and chemical treatment can isolate sediment from the milk power solution.
- Able to detect melamine from milk powder solution by using Portable Raman Spectrometer with surface-enhanced Raman scattering technology.

Transistor Level Application of Mars Rover Inquire Finite State Machine   *University at Buffalo*
- Design and implemented a mars rover control chip on the schematic and gate level by using Cadence Virtuoso.
- Successfully passed all the test and embedded into a pad frame.

Breakout Game Design   *University at Buffalo*
- Implemented and redesigned the breakout game in C language running on a LandiTiger LPC1768(ARM Cortex-M3) develop board.

Research Experience

Research Assistant - *University at Buffalo Optical & Ultrasonic Imaging Laboratory*   *2017- 2018*

Data collection for photoacoustic imaging based finger vessel biometric sensing system
- Designed and 3D printed a robust transducer holder for fast and convenient data acquisition.
- Recruited volunteers and organized imaging schedule.
- Independently aligned optical path, acquired and analyzed data with a customized photoacoustic imaging system.

Photoacoustic finger print identification (Liveness detection)
- Participated in the experimental design and validation.

Deep tissue photoacoustic imaging
- Tested and validated the deep-tissue photoacoustic imaging application of a highly absorbing nanoparticle in more than 10 cm chicken breast tissue in living mice.
- Reconstructed and analyzed the acquired data.

Free-moving mice intestine imaging
- Part of the team using a real-time detecting system to track free-moving mouse for intestine imagining.

Teaching Experience

Student Assistant - *University at Buffalo Electrical Engineering Department*   *2018*
- Hold study lounge of EE Department. Provide academic help for major-related undergraduate courses.
- Graded homework. Hold office hour. Proctored the exam. (EE202 Circuit Analysis, EE305 Applied Probability)

Technical Skills

C, C++, MATLAB, VHDL, Multisim, Sketch up, Cadence Virtuoso, Verilog, Python, CUDA, MPI ,OPENMP