Jian Gao

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https://Jian-99.github.io/Timeline

PROFILE

A huge fan of technology, an enthusiastic engineering student, a basketball fan,

a member of UBC Aerodesign.

EDUCATION

University of British Columbia — Anticipated Apr 2021

Bachelors Degree of Applied Science, Electrical Engineering

SKILLS

- Violin & Video editing
- Arduino, CircuitMaker, Matlab, Quartus, and Solidworks
- Programming in C , Python, Swift and Java
- Programming in Verilog, ARM assembly, and 8051 assembly

TECHNICAL PROJECTS

Coin Picking Robot — Mar 2019

Programmed in C with STM32, a 32-bit Flash ARM-based microcontroller, the robot was designed to pick up all the coins scattered within a 0.5 m^2 area using electromagnets.

- Designed and constructed the mechanism, circuits, and C code for perimeter detector, coin detector and servo motors
- Configured pins for outputs/inputs and set up makefiles
- Integrated HC-05 bluetooth module to take control of our robot wirelessly through our Android terminal

Heart Rate Monitor with EFM8 — Feb 2019

To focus on real-life biomedical applications, a typical heart rate monitor was built using EFM8 8-bit microcontroller. This project was coded in C.

- Assembled the amplifying circuit and the finger clip with an infrared LED and a phototransistor attached on sides
- Set up ADC to convert the signal to a square wave and activated Timer0
- Implemented EEPROM to store the past heart rate statistics

Construction of a CPU in Verilog **Nov 2018**

Digging into the operating principle behind a CPU, one of the Hardware Description Language (HDL) was used to build different components, such as a finite-state machine, a memory block, a data path etc. The approach was implemented on DE1_SOC by Terasic. Additionally, switches and a 7-segment display from DE1-SOC were connected to the CPU as I/Os.

- Developed a finite-state machine (FSM)
- Added new input/output wires to data path
- Performed the program counter and the CPU as a whole using Verilog testbench and a machine code set

RESEARCH EXPERIENCE

Facial Recognition and Machine Learning — Sichuan University, Chengdu **Jul 2019**

- Created a standard to accurately describe one's appearance
- Built and trained a neural network to deduce the race, gender, and age of the person

Quantum Computing and Neural Networks — CSRC, Beijing **Aug 2018**

- Implemented Gradient Descent to elevate the performance of an existing neural network
- Developed and tested a neural network that determines the possibility of simplification of polynomial equations

WORK EXPERIENCE

Notetaker: ELEC 321 (Stochastic Signals and Systems) — UBC, Vancouver **Sep 2019—Present**

- Worked closely with UBC Centre for Accessibility to provide legible notes for students with disabilities

Volunteer: UK-China Workshop on Employing ICT for Mountainous Rural Community Relief from Natural Disasters — Sichuan University, Chengdu **Aug 2018**

- Participated in guest reception at hotel for the seminar, photo taking and light control

ADDITIONAL EXPERIENCE

Design Team: UBC Aerodesign — UBC, Vancouver **Sep 2019—Present**

- Built a data acquisition system (DAS) using Arduino
- Developed a ground station which shows the data collected by the plane and its trajectory

Hackathon: Rogers 5G Edge Challenge — UBC, Vancouver **Oct 2019**

- Used Rogers 5G connection to offload compute to the local MobiledgeX cloudlet
- Implemented facial and posture recognition in an Android application

Workshop: Charging Supercapacitors Using Photovoltaic Cells — UBC, Vancouver **Sep 2019**

- Designed the architecture and circuit for efficiently collecting solar power

Award: UBC Outstanding International Student Award — UBC, Vancouver **Sep 2017**