

# Jian Gao

Vancouver, BC • 778-325-5825 • gaojian@alumni.ubc.ca  
<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  $0.5\text{ m}^2$  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

- 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 Descend" 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 MobileEdgeX 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