ubc science co-op
T: 604.822.9677 | F: 604.822.9676 | science.coop@ubc.ca | www.sciencecoop.ubc.ca

Daniel Chen

Given Name: Po-Yu Chen
Email: poyuchen@alumni.ubc.ca
Phone Number: +1 (604) 404 9038

Technical Skills

Software
- Java
- Basic UI/UX and Algorithm
- C/C++
- Object-Oriented Programming
- Python
- Git (Version Control)

Engineering Tools
- MATLAB
- Solidworks
- Circuit Prototyping
- Basic Electronics
- Machining and Soldering

Others
- Technical Communication
- Microsoft/MacOS
- Lab Techniques
- Arduino
- InDesign & Adobe Illustrator
- Excel

Technical Experience

SUBC Submarine Design Team, UBC, Vancouver, Canada **Jan 2019 – Present**
Lead Software Developer, *Electrical Steering Team / Executive, Buoyancy Team*
- Analyzed the buoyancy of a submarine by calculating internal and external forces and moments using MATLAB, Excel, and stimulation models on SolidWorks
- Designed and constructed supporting submarine structure to maintain the submarine's neutral buoyancy
- Developed and architected an automated buoyancy compensation control device that modifies the volume of air using an Arduino controller programmed in Object-Orientated Programming in Java
- Software-prototyped an autonomous steering system using PCB, motors/actuators, and Java programming to integrate the fins, mechanical steering system, and electrical steering system
- Serve as a supporting diver for SUBC underwater training and testing
- Our submarine competed in the International Submarine Race with speed of 2.1 knots

Research Student, *UBC Quantum Device Group, UBC, Vancouver*, Canada
Junior Analyst and Experimentalist, 2D-Material Group **Oct 2018 – Present**
- Calibrated, and verified calibration of multiple lab equipment to facilitate quantum measurements in the laboratory using Python and Query Language on Jupyter Notebook and C++ on Arduino
- Designed and calibrated Digital-Analog Converter (DAC/ADC), which is used for measuring electrical fluctuation of a moving quantum dot, such that the error is within ± 1 microvolts
- Exfoliated graphene and invented new procedures for exfoliation and purification which led to an increase amount of monolayered graphene by 23.1%
- Participated in 2D material group discussions to gain insight of more advanced quantum-related topics and the applications of our experiments, such as quantum computing and superconducting materials

Personal Technical Projects

Sudoku Solver, Personal Programming Project **Jun 2019**
- Used Java to develop an arbitrary user-specified n-by-n Sudoku Solver generating all possible solutions with backtracking and breadth-first search method applied
- Able to solve the hardest Sudoku "AI Escargot" rated by Finnish mathematician Arto Inkala

Text Editor, Personal Programming Project **Jun 2019**
- Developed an interactive text editor program that performs entirely the same as the text editor application on Windows/MacOS using Java (GUI) Swing

Fastest Itinerary, Personal Programming Project **Mar 2019**
- Programmed in Java to design a North American Railway System that contains backtracking search methods to obtain the shortest itinerary between stations

Automatic Cleaning Machine, Personal Robot Project **Jun – Jul 2019**

- Designed a PID-controlled carrying device that uses sonar / light sensors to avoids obstacles within 20cm
- Integrated MOSFET into controlling system to improve voltage switching speed and combined them with PWM type controller and motors to obtain smooth and stable motor operation
- Programmed an Arduino in Java to adjust steering direction, motor speed, and angular rotation speed in order to avoid obstacles detected by the sonar and light sensor

Virtual Computer (CPU), Personal Project **Jun 2019**

- Designed a Y86 CPU digital circuit on Logism by utilizing logic gates, multiplexers, latches, and flip-flops to perform like a computer with sections including 16MB RAM, Memory, Execute, Decode and Fetch
- Able to perform tasks such as basic arithmetic operations, data storage and retrieval, instruction retrieval, and display information

Education

University of British Columbia *Intended Grad: Jun. 2023*

Engineering Physics ***Major GPA: 4.075***

- Trek Excellence Scholarship Award ($4,000) - average of **95% for top 24 credit courses**
- UBC Outstanding International Student Award ($12,000) – awarded upon admission into UBC
- Achieved an average of 88.9% for all courses

School Projects

Speed-Controllable Motor, Individual Project, UBC, Vancouver, Canada **Oct 2019**

- Designed a speed-controllable motor by implementing digital electronics, DAC, counters, and latches
- Performed circuit analysis, prototyping, and exercised project management skills throughout the project

The C10W Robotic Claw, *Group Project, UBC, Vancouver, Canada* **Jan – Feb 2019**

- Design an automated robotic claw by implementing all engineering design stages from quantitatively examining potential solutions to product adjustments and iterations
- Head programmer using Java on Arduino to detect object and trigger activation using an ultrasonic sensor and servo motor
- Machined an metal claw that can grab weights up to 2.45 kg and 55 pieces of pasta in 5 minutes

The Pizza-Box Cardboard Chair, *Group Project, UBC, Vancouver, Canada* **Sep – Oct 2018**

- Constructed a chair that is entirely made of cardboard, able to support 240 lbs., and able to be folded into a pizza box
- Modelled the cardboard chair using Solidworks and MATLAB to find optimal solution

Others

Certifications:

- PADI Open Water Diver
- PADI Advanced Open Water Diver
- IYT International Crew Certification

Interests:

- Sports: Former track and field athlete, Diver, Swimming, Surfing, Basketball
- Travelling: Backpacking in Europe for 31 days, across East, South, and West Europe and 8 countries