Justin Hua

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TECHNICAL SKILLS

SOFTWARE

- Programming & Software: AutoCad, SolidWorks
- Communication protocolsL: I2C, SPI, UARTX, CAN
- C / C++ / C++20, Object Oriented programming
- VHDL: Altera Quartus II, ModelSim
- Matlab, LTspice,RStudio, Github
- Other programming language: Python, HTML
- Firmware programming

HARDWARE

- Comprehend fundamental and complex electronic circuit
- Build, troubleshhot, and improve hardware system
- Capable with function generator, oscilloscope, multimeter
- SMD soldering, PCB assembly
- Integrated circuit, FPGA
- PCB desgign: Altium, Kicad

WORK EXPERIENCE

Firmware Engineer Coop

April - Sep 2024

Faculty of Applied Sciences, SFU

- Designed a 3D-printed enclosure in SolidWorks with a closable cover to protect electrical components while allowing airflow through the system
- Designed and tested a low-noise electrical circuit capable of measuring nanoampere-level current and producing clean readout graphs for gas molecule signal analysis. Developed embedded software to operate the measurement circuit and created SPI communication between an STM32 microcontroller and DAC.
- Built a Python user interface in Spyder to display data, control ADC sampling rate, adjust step voltage, plot data mathematically, and specify DAC output voltage.
- Organized engineering data, documentation, part information, and test records using Excel and database-style tools, with interest in learning PLM software for product lifecycle management.

TECHNICAL PROJECTS

Maskless Lithography Machine

Dec 2025 - Aug 2026

Capstone Project, SFU

- Designed motion-control and shape-processing algorithms to translate lithography patterns into precise XYZ stage movements achieving sub-micron movement , also support with xyz-stage calibration.
- Led software development for a lithography machine, overseeing algorithms, UI design, and firmware communication to win most user-friendly UI award in the capstone cohort.
- Built the UI and serial communication workflow for sending commands, receiving firmware responses, and debugging machine-control delays.

Heart BPM Measurement Device

May - Sep 2025

Biomedical Instrumentation, SFU

- Designed and built a heart BPM measurement device using a photodiode-based sensor system, including CAD-designed photodiode/sensor and PCB holders to improve alignment and stability.
- Designed the PCB layout for signal acquisition and organized component placement.
- Assembled and tested the device to measure heart rate, verify functionality, and troubleshoot sensor/circuit performance, achieving a shelf-ready product.

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TECHNICAL PROJECTS CONTINUED

Breast Cancer Tumor Segmentation
Jan - Apr 2025

Biomedical Image Acquisistion, SFU

- Developed an algorithm in MATLAB to automatically detect and segment breast cancer tumors in MRI scans
- Applied preprocessing techniques including filtering and image enhancement to improve image quality. Utilized edge detection and morphological operations for accurate tumor boundary extraction

AM Radio - Electric Circuit I
Nov - Dec 2023

Electric Circuit 1, SFU

- Designed and constructed an AM radio circuit using op-amps, capacitors, resistors, and a self-made inductor, applying analog circuit concepts to successfully receive AM radio/news signals.
- Analyzed the circuit's functionality, focusing on amplitude modulation principles and the role of each component in signal detection and filtering

Electric Skateboard Building
Apr – Aug 2022

Mechanic and Modern Physics, SFU

- Sourced and assembled ~25 components, including a 12V/12Ah battery, brushless motor, remote control board, wiring, connectors, and mounting hardware to build a working electric skateboard.
- Used AutoCAD and KiCad for mechanical/electrical layout, then tested the system to verify operation, troubleshoot issues, and evaluate safety and performance.

LEADERSHIP EXPERIENCE

Math Peer Educator
Jun - Sep 2023

Faculty of Applied Sciences, SFU

- Prepared comprehensive documents and detailed solutions by thoroughly understanding the core concepts and problems, ensuring students could follow a clear and logical approach to problem-solving
- Demonstrated effective communication of solution methods to enhance student comprehension, while continuously improving personal skills in explaining concepts and solving problems systematically

EDUCATION

Simon Fraser University, Burnaby, BC
Oct 2021 - Present

- Bachelor of Applied Science
- SFU Honor Student: Biomedical Engineering

ADDTIONAL INFO

- **Github:** https://github.com/Jhua03
- **Linkedin:** https://www.linkedin.com/in/hua-minh-tri-justin/