

Steven Xu

Vancouver, Canada ✉ stevenxuyz03@gmail.com ☎ 778-929-9892 in Steven Xu ↗ Portfolio

Education

3rd Year Engineering Physics, Bachelor of Applied Science

09/2021 – 05/2026 | Vancouver, Canada

University Of British Columbia

Skills

Mechanical

Solidworks, AutoCAD, OnShape, 3D printing, Laser/Waterjet cutting, CNC, Composite manufacturing, GD&T, FEA

Electrical

Altium, Soldering, Oscilloscope, Microcontrollers, Multimeter, Control Systems, PCB Design

Software

C, C++, Python, Java, MATLAB, AutoLISP, Git, ROS, OpenCV, Linux, MS Office

Technical Experience

Avalon Mechanical

01/2023 – 05/2023

Mechanical Engineering Intern

- Converted architectural drawings using Autocad Lisps commands, devised scripts that streamlined the conversion
- Automated a comprehensive HVAC heat loss calculation model using Excel used by all employees
- Developed AutoLISP scripts to automate AutoCAD drawing setup to company standard, reducing task time by up to 90%
- Designed HVAC and plumbing systems adhering to government code while communicating and satisfying client needs

UBC Aerodesign

09/2021 – present

Subteam Lead | Advanced Airfoils

- Leading a team of 9 students through the design and manufacture of all the lifting and control surfaces for our advanced class planes - 120" span heavy lift aircrafts competing in the annual SAE Aero Design Competition
- Recruited, trained, and managed new team members in wing design and manufacturing methods
- Documented and presented our designs on behalf of my subteam in technical reviews
- Earned 1st place in technical presentation in 2023 and 5th place overall in 2022

Projects

Kyogre & Spirit - UBC Aerodesign

09/2021 – present

- Designed the aircraft's main wing, ailerons, and all servo connections using SolidWorks with DFMA methods
- Manufactured utilizing 3D printers, waterjet cutters, laser cutters, CNC machines, and carbon fiber molds
- Streamlined manufacturing processes, improved assembly alignments and cut construction time and errors by over 70%
- Collected analytical data from Xflr5 and Solidworks Flow to build models in MATLAB, Python, and Excel to optimize and size wings and control surfaces, improving lift and drag by 20% compared to past years
- Conducted structural analysis with Excel, SolidWorks simulation, and physical testing

Autonomous Racing Robot

06/2023 – 08/2023

- Designed, modeled, and manufactured multiple iterations of the robot using Onshape and Solidworks
- Collaboratively designed the power distribution system with hardware signal processing and noise shielding
- Integrated sonars, infrared, and reflectivity sensors with DC and servo motors; debugged systems using oscilloscopes
- Contributed to developing the microcontroller firmware, PID control, and signal processing algorithms including frequency filtering using convolution and Fast Fourier transforms
- Robot autonomously detects collisions, follows tape and infrared beacons, drops obstacles, and slides down a zipline

Autonomous Pool Robot

08/2023 – present

- Driven by 3 stepper motors with omni-wheels controlled by a Python kinematics model for precise motion control
- Using OpenCV to retrieve positional data of the robot and balls to calculate optimal pathing, striking force, and angle
- Utilizing a high-voltage solenoid to actuate the striking arm with controllable speed
- Implemented Wi-Fi protocol for efficient transmission of computer vision output to the ESP32 microcontroller

Servo Speed Control Circuit

09/2022 – 12/2022

- Utilized ICs, sensors, and feedback loops to build a dynamic motor speed regulator
- Tested and troubleshooted circuit elements using digital oscilloscopes, multimeters, and simulation software