Steven Xu

Vancouver, Canada | stevenxuyz03@gmail.com | 778-929-9892 | 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 printer, Laser cutter, Waterjet cutter, CNC machining, Composites manufacturing

Software
C, C++, Python, Java, Matlab, AutoLISP, Excel, HTML, Git, MS Office

Electrical
Altium, Soldering, Oscilloscope, Microcontrollers, Multimeter

Technical Experience

Avalon Mechanical 01/2023 – 05/2023
Mechanical Engineering Intern
- Converted architectural drawings to engineering and company standard layouts using Autocad Lisps commands. Later devised AutoLISP routines that streamlined the conversion,
- Automated a comprehensive HVAC heat loss calculation model using Excel used by all employees in the Vancouver office.
- 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
- Established efficient manufacturing routines, improved assembly alignments, and reduced construction time and error by upwards of 70%, facilitating more test flights and faster repairs
- Collected analytical data from Xflr5 and Solidworks Flow to build models in MATLAB, Python, and Excel to optimize and size wings and control surfaces
- 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, DC, servo, and stepper motors.
- Debugged software and electronics using an oscilloscope
- Contributed to developing the microcontroller firmware, PID control, and signal processing algorithms including frequency filtering using convolution and Fast Fourier transforms
- Final robot able to autonomously detect edges and collisions, follow tape and an Infrared beacon, drop an obstacle to derail competitors, grab and slide down a zipline or jump off a ramp as a shortcut

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
- Output of the computer vision algorithm is communicated to the esp32 microcontroller through wifi

Servo Speed Control Circuit 09/2022 – 12/2022
- Constructed a servo speed controller using integrated circuits, light sensors, and feedback loops capable of controlling the speed of a motor by adjusting the current supplied.
- Tested and troubleshot circuit elements such as transistors, inductors, and capacitors using digital oscilloscopes, multimeters, and simulation software