Steven Xu

3rd Year Engineering Physics, University of British Columbia

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Education

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, Carbon fiber composite manufacturing

Software
C, Python, Java, Matlab, AutoLISP, Excel, HTML, Google Colab, Slack, Git, Tinkercad, Trello, Notion, Miro, MS Office

Electrical
Altium, Soldering, Oscilloscope, Arduino, Multimeter

Technical Experience

Avalon Mechanical 01/2023 – 05/2023 | Vancouver, Canada
Mechanical Engineering Intern
- Converted architectural drawings to engineering and company standard layouts using Autocad Lisps commands. Later devised AutoLISP routines that significantly streamlined the conversion, especially for large projects.
- Automated a comprehensive HVAC heat loss calculation model applicable to all types of buildings using Excel used by all employees in the Vancouver office.
- Developed a set of scripts using AutoLISP to automate the entirety of AutoCAD drawing setup to company standard, reducing task time by upwards of 90%.
- Designed efficient HVAC and plumbing systems adhering to government code while communicating and satisfying client needs.

UBC Aerodesign 09/2021 – present | Vancouver, Canada
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, earning 1st place in technical presentation in 2023 and 5th place overall in 2022
- Recruited and trained new team members in wing design and manufacturing methods like laser/waterjet cutting and composite manufacturing.
- Documented and presented on behalf of my subteam our designs and reasonings in technical reviews to enable productive communication between subteams.

Projects

Kyogre & Spirit - UBC Aerodesign 09/2021 – present | Vancouver, Canada
- Designed the aircraft's main wing, ailerons, and all servo connections using SolidWorks with DFMA methods.
- Manufactured the planes with tools and skills such as a 3D printer, waterjet cutter, laser cutter, CNC machine, and carbon fiber molding.
- Established an efficient manufacturing routine for repeatable production of balsa and carbon fiber components and improved assembly alignments, reduced construction time and error by upwards of 70%, facilitating more test flights and faster repairs
- Wrote comprehensive documentation on the design process and manufacturing methods to enable more efficient design verification, cross-subteam communication, and training for new members
- Collected analysis data from Xflr5, Solidworks Flow, and hand calculations 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.
- Productively managed and trained members through strategic task distribution, attentive mentorship, and effective communication.
- Organized concise and engaging meetings and design reviews to ensure the timeline is strictly followed and information is clearly distributed. Encouraged discussions and constructive feedback on design choices across all members and vigilantly resolved concerns and disagreements.

Autonomous Racing Robot 06/2023 – 08/2023 | Vancouver, Canada
- Designed, modeled, and manufactured multiple iterations of all mechanical parts of the robot using Onshape and Solidworks, notably Ackerman steering and a zipline mechanism.
- Collaboratively designed the power distribution system with hardware signal processing and noise shielding
- Integrated sonars, infrared and reflectivity sensors, DC, servo, and stepper motors.
- Troubleshot and 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 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

Servo Speed Control Circuit 09/2022 – 12/2022 | Vancouver, Canada
- Tested and troubleshot circuit elements such as transistors, inductors, and capacitors to observe their behavior in different circuits using digital oscilloscopes, multimeters, and testing boards.
- Designed and built 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.

Vacuum pump - UBC Physics Olympics 2020 | Vancouver, Canada
- Led a team of 7 students in high school through the design of a functional vacuum pump
- Able to lower then maintain the pressure within a leaky container consistently as competition required.

Robotic Claw 02/2022 – 03/2022 | Vancouver, Canada
- Designed and manufactured an autonomous claw that picked up and dropped off items ranging from paper clips to soda cans
- Programmed the claw in C using an Arduino board connected to a sonar and servo
- Outperformed 90% of teams