Clark Jeffrey

Vancouver, BC

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Key Competencies

Design	• SolidWorks • FMEA • DFM • Drafting
Manufacturing	• Milling Machines • Lathes • Drill Presses • Bandsaws • Hand Tools • Press Brakes • Laser Cutters • 3D Printers
Programming	• C++ • C • Python • MATLAB • HTML • CSS • JavaScript
Development	• Git • GitHub • Visual Studio Code • Arduino • Linux
Instrumentation	• Simulink • Soldering • Oscilloscopes • Function Generators • Multimeters
Software	• Excel • LaTeX • Word • PowerPoint • Teams
Certifications	• Certified SolidWorks Professional (CSWP) • Emergency First Aid & CPR/AED Level C

Work Experience

The University of British Columbia, Vancouver BC, Canada

MECH 2 Lab Academic Assistant **(05/2024–present)**

- Developing interactive pre-lab problem sets for mechanical engineering labs using Python and HTML.
- Designing questions which emulate the lab environment, allowing students to perform realistic data analysis.
- Generating synthetic datasets using quadratic regression, Gaussian curve-fitting, matrix manipulation, and symbollic solving of systems of equations, in order to ensure data are realistic, and fit appropriate trends.
- Typesetting fully-worked solutions to pre-lab problem sets using LaTeX.

Student Design Teams

UBC Subbots, Vancouver BC, Canada

Software Developer **(09/2023–present)**

- Developing software to control our autonomous underwater vehicle (AUV) 'Triton' using Linux, C++, ROS 2, and Git.
- Programming a central 'mission planner' with the 'BehaviorTree' library, which is responsible for coordinating the actions of nodes, interpreting input from sensors, and generating targets.
- Designing a tree architecture capable of supporting parallelism, to improve the AUV's ability to adapt.
- Integrating BehaviorTree nodes with ROS nodes to allow for seamless communication across established ROS topics.

Technical Projects

Portfolio Website – Personal Project **(05/2024–present)**

- Developed a reactive portfolio website (found here) from the ground up, using HTML, CSS, and JavaScript.
- Designed a modular framework using JavaScript and JSON, to make it easy to add and update projects.

Chess Engine – Personal Project **(02/2024–present)**

- Optimised a recursive search in C++ to evaluate hundreds of thousands of moves in a fraction of a second.
- Utilised low-level bitwise operations to optimise operations.
- Encoded board positions is a hash structure to allow for fast evaluation lookups.

ROV Water Propulsion System – MECH 2, UBC **(03/2024–04/2024)**

- Applied fluid mechanics principles to determine required pressure and nozzle geometry.
- Utilised solid mechanics principles to assess viability of water propulsion concepts, and minimise component stress.
- Modelled a variety of nozzles in SolidWorks, using equations to automatically create required geometry.
- Prototyped components to fine-tune performance and improve final implementation.

ROV Manual Transmission – MECH 2, UBC **(01/2024–02/2024)**

- Determined required torque and gear ratios in order to successfully navigate a competition course.
- Designed and modelled a manual transmission and gear train to facilitate gear changes using SolidWorks.
- Simulated stress on transmission components to assess viability using SolidWorks.
- Prototyped components to identify shortcomings and improve final implementation.

Magnetic Levitator – MECH 2, UBC **(08/2023–09/2023)**

- Interpreted engineering drawings in order to create parts to specifications.
- Machined parts accurately using milling machines, lathes, and press brakes.
- Soldered electrical components onto a circuit board.

Education

The University of British Columbia, Vancouver BC, Canada (**09/2022–05/2026**)
Bachelor of Applied Science – Mechanical Engineering (*Mechatronics*)

- Co-op: available for 4 months beginning September 2024
- CGPA: 87.4%
- Relevant courses:
  Engineering Science I & Differential Equations for Mechanical Engineering (**87%**)
  Engineering Science II & Multivariable and Vector Calculus for Mechanical Engineering (**84%**)
  Introduction to Computation in Engineering Design (**99%**)
  Introduction to the Mechanical Design Process (**83%**)

Trek Excellence Scholarship for Continuing Students (**2023**)

Volunteering

Pan American Hockey Federation, Bermuda
Stream Technician (**04/2022**)

- Managed livestreams for the Central American and Caribbean 2022 qualifiers held in Bermuda.
- Broadcasted a live view of play, score counts, game timers, and sponsorships to the PAHF YouTube channel.

Personal Interests

Music I've played the cello for 12 years, having passed my ABRSM Grade 8 Cello exam with distinction in 2022. I've participated in many ensembles, including the Bermuda Philharmonic, and have received several music scholarships throughout my education. I also play the piano and bass guitar.

Writing For the past few years, I've been working on writing and typesetting a book in my free time. Reading stories is fun, but creating them is an engaging and rewarding challenge.

Baking Over the weekends, I like taking some time to relax and bake sweet treats. My tried and trues are fudge brownies, butterscotch cookies, and cheesecake bars. They serve as great study motivation!

Scuba Diving During the summers, I enjoy going out to the reefs and wrecks of Bermuda with my dad, and taking pictures of the beautiful underwater scenery.