Boris Li

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Education

University of British Columbia, Vancouver, BC — Sep 2020 – current
BSc Combined Honours Physics & Mathematics

- 3-time Dean's Honour List (80% or better average)
- 2-time Science Scholar (90% or better average)
- Science One, class of 2021

Research

University of British Columbia, Vancouver, BC — May 2023 – current
Departments of Mathematics and Mechanical Engineering
Undergraduate Research Assistant

- Studied the fluid mechanics behind flow between a heavier Herschel-Bulkley fluid on top of a lighter Newtonian fluid in a vertical pipe
- Utilized both experimental techniques, and simulations through ParaFOAM

University of British Columbia, Vancouver, BC — May – Aug 2022
Department of Physics and Astronomy
Undergraduate Research Assistant

- Studied the dipole anisotropy of quasar distributions from WISE data
- Utilized astronomy-related Python pacakges, such as Astropy, Healpy, and PolSpice

Teaching

University of British Columbia, Vancouver, BC — Sep 2021 – Apr 2023
Science One Program
Undergraduate Teaching Assistant

- 4 terms for the Physics and Mathematics portions of SCIE 001
- Led tutorials, held office hours independently, and marked exams

University of British Columbia, Vancouver, BC — Sep 2021 – Apr 2023
Department of Computer Science
Undergraduate Teaching Assistant

- 4 terms for CPSC 110: Computation, Programs, and Programming
- Led labs alongside other TAs, held office hours independently, and marked exams

University of British Columbia, Vancouver, BC — May – Aug 2021
Department of Mathematics
Undergraduate Academic Assistant

- Wrote and designed questions for PrairieLearn, an online homework and testing platform, based on the CLP textbooks[1]
- Developed a system for units-aware problems in PrairieLearn, which has now been merged into the main repository[2][3]

Projects

Cube Project: A Robotic Rubik's Cube Solver Apr 2023
affiliated with PHYS 319: Electronics Laboratory

- Constructed hardware and software behind a mechanical Rubik's Cube solver using a MSP430 microcontroller and six NEMA 17 stepper motors
- Wrote software in C and Python to facilitate communication between the solving algorithm and the robotic solver

Minimalist Cube Timer Dec 2021
affiliated with CPSC 210: Software Construction

- Wrote a small timer for Rubik's Cube solving in Java

The Efficiency of the Rubik's Cube: A Numerical Analysis of Rubik's Cube Speed-Solving Methods, with a Focus on CFOP & Roux Apr 2021
affiliated with SCIE 001: Science One

- Self-guided research project analyzing the speeds of different Rubik's Cube solving methods, utilizing a computer simulation[4]

The Century-Old Problem: A Brief Overview of the Poincaré Conjecture and Perelman's Solution
affiliated with SCIE 001: Science One Dec 2020

- Expository prose dedicated to covering the Poincaré Conjecture and solution, with the intended audience being first-year undergraduate students

Awards

Undergraduate Student Research Award (CAD$12000 over 2 awards) 2022-2023
National Sciences and Engineering Research Council of Canada

Charles and Jane Banks Scholarship (CAD$490 over 2 awards) 2021-2022
UBC Faculty of Science

Trek Excellence Scholarship (CAD$1500) 2022
University of British Columbia

Stanley M Grant Scholarship in Mathematics (CAD$3000) 2022
UBC Department of Mathematics

[1] https://personal.math.ubc.ca/~CLP/
[2] https://github.com/PrairieLearn/PrairieLearn/pull/4801
[3] https://github.com/PrairieLearn/PrairieLearn/pull/6790
[4] https://github.com/Cadenze/t2-cube