Lucy Hao

hao.lucyy@gmail.com | lhao03 | lhao03.github.io

Education

University of British Columbia Expected Dec 2024

B.Sc. Combined Computer Science and Chemistry

- *Coursework:* Introduction to Quantum Mechanics and Spectroscopy, Principles of Spectroscopy, Introduction to Artificial Intelligence, Electronic Structure of Atoms and Molecules, Definition of Programming Languages, Operating System Design & Implementation

Research Experience

UBC iGEM Nov. 2022 - current

Dry Lab Co-Lead and Wiki Lead *Vancouver, Canada*

- Leading a team of 6 members to develop innovative models and tools to aid research in a synthethic biology context.
- Championed and implemented an **internal documentation system** for all members to promote knowledge sharing, team transparency and iterative steps towards the success of our project.
- For 2022/23 season, modeled the **thermodynamics of a StayGold intein-protein** folding in aqueous solution, confirming the wet lab results that protein folding was not thermodynamically favored in aqueous solution.
- Single-handedly developed the project wiki, required for the project to be judged.
- *Skills:* Python, SSGs, GROMACS, PyMol, Pyrosetta, HPC, Bash, literature review

PROOF (Prevention of Organ Failure) Centre of Excellence Jan. 2021 - May 2021

Undergraduate NLP Researcher *Vancouver, Canada*

- Re-implemented a fragile and nongeneralizable natural language processing pipeline to generate a specific algorithm that can extract patient information from any type of clinical note with any set of labels
- Added pre-trained word embeddings, generalizable regular expressions, and an OCR correction algorithm to the pipeline, achieving a validation set accuracy of **91%** on 100 unseen clinical notes
- Published paper as second author: Chen, Y., Hao, L., Zou, V.Z. *et al.* Automated medical chart review for breast cancer outcomes research: a novel natural language processing extraction system. *BMC Med Res Methodol 22*, 136 (2022)
- *Skills:* Python, regular expressions, scispaCy, pandas, Natural Language Processing, Unix, GUI, literature review

Teaching Experience

Systematic Program Design (CPSC 110) Winter 2021, Winter 2022

Computer Science Teaching Assistant

- Led three labs, graded exams/problem sets, and taught concepts from functional programming and data-driven programming in Racket; received an evaluation score of **90%** during the Winter 2021 term

Software Construction (CPSC 210) Winter 2020, Summer 2021

Computer Science Teaching Assistant

- Led four labs, invigilated exams, graded exams/final projects, and taught concepts such as test-driven design, design patterns, and object-oriented programming in Java; received a **100%** evaluation score during the Summer 2021 term

Industry Experience

Capital One Jun. 2022 - Aug. 2022

Software Engineering Intern (TIP) *New York, United States*

- Piloted the use of AWS Device Farm, creating end-to-end tests for Mobile App Verification for the Capital One app and website, as well as finding and relaying **five** pain points of AWS Device Farm to upper level technical executives
- *Skills:* Python, Selenium, Java, Appium, AWS

Microsoft May 2021 - Aug. 2021

Software Engineering Intern (Garage Program) *Vancouver, Canada*

- Collaborated with six other interns to plan and develop an internally requested sandbox tool that allows users to try out the Microsoft Graph API within Microsoft Teams without technical set-up
- Added static analysis tools and pre-commit hooks, reducing the time to review and approve PRs by over **10 minutes**
- Refactored the code-base by introducing functional programming concepts and abstracting duplicated code, resulting in the removal of over **500+** lines of code
- Communicated with two teams to troubleshoot five bugs and created documentation for possible solutions
- *Skills:* React, Redux, JavaScript, TypeScript, Teams App Development, Microsoft Graph API