

Sophie Chang

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TECHNICAL SKILLS

- Programming Languages:** Java, C++, html, css, Visual Basic, Python
Tools: SolidWorks, Rapid Prototyping/3D printing, Matlab, git, github, gitlab
Languages: English, French (DELF: B2)
Soft skills: Communication, Collaboration, Time Management, Problem Solving

PROJECTS

Reach for the Top points counter | *C++, CLion*

- Improved the documentation of Reach for the Top games to reduce the paper usage of coaches by creating a program that implemented object oriented programming strategies
- Added features to allow users to see the game history of players by implementing a file saving mechanism

Checkers | *Java, Apache NetBeans*

- Built a functional a 2-player checkers game, integrating win-state detection, board visualization, move validation and king promotion logic
- Developed a button based board GUI using java.swing and AWT to display the board in an intuitive fashion
- Tracked checker stones and king states and positions using a matrix based system to manage board logic
- Reduced code written by **50%** by implementing object oriented programming

EXPERIENCE

Northern Student-Led Arctic Research Program (NorthSTAR)

Sept 2023 – Aug 2025

Kelvin High School

Winnipeg, MB

- Collaborated with Dr. Waterman, Dr. McKinnon, Dr. Ross and other student researchers to collect data to analyse the body health index of **37 individuals** of the Western Hudson Bay polar bear population
- Found a downwards trend in polar bear health by analyzing **13 years of data** for health trends in the overall population using **3 different methods** to determine body condition
- Presented a poster comparing **3 methods** of assessing polar bear health at the Canadian Society for Ecology and Evolution 2024 (Vancouver) and the 2024 Manitoba Chapter Wildlife Society Annual Meeting (Winnipeg)

Kelvin High School Mentorship Program Team Leader

Jul 2024 – Aug 2025

Kelvin High School

Winnipeg, MB

- Tracked online finances for a walk-a-thon which raised over **\$15,000** for CancerCare Manitoba using Google Sheets
- Facilitated the academic success of **50+ freshmen** by collaborating with peers to encourage study habits
- Created a video shown to welcome **300+ freshmen** by working in the pre-production and production teams

Mechanical Subteam Member

Sept 2025 – Present

Biomechatronics Design Team

Waterloo, ON

- Collaboratively and iteratively designed a low-cost mechanic exoskeleton hand which **cost \$10** to aid people with low hand strength using SolidWorks
- Designed and modeled **1 degree of freedom** joints in SolidWorks to optimize parts spacing
- Rapidly prototyped a pin locking mechanism in SolidWorks to provide external structural support for the hand
- Communicated effectively so that handoffs are smooth and dimensions between parts are correct

EDUCATION

University of Waterloo

Waterloo, ON

Bachelor of Applied Science in Biomedical Engineering | 3.9 GPA

Class of 2030

- Courses: Data Structures and Algorithms, Digital Computation, Linear Algebra, Calculus I and II, Visual Communication in Engineering

HOBBIES AND INTERESTS

Member: Kelvin Highschool Reach for the Top team (won provincials, went to nationals)

Volunteering: Middle school hurdles coach, Angel Tree Christmas church coordinator, Festival du Voyageur

Sports: Ultimate Frisbee (UWaterloo and Canadian Junior Ultimate Nationals), Track and Field (4x provincials)