

Arnav Kumar

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Projects

- Haskell CLI Chess Engine** Aug 2022 - Present
- A functional programming chess engine that enables one to play chess from the command line.
 - Heavily uses the maybe monad, and lists as applicatives, monads, and functors.
- Javascript Modular Personal Website** Mar 2022 - Aug 2022
- Built a modular website with javascript which reads from a contents data structure to generate a site.
- Bash Flashcards** Apr 2022 - Apr 2022
- Built a tool to add terms and practice with a flashcard set for unix based systems.
- Python Braille ASCII Art Generator** Apr 2021 - Jul 2021
- Takes images, and converts it into ASCII art using braille characters using the OpenCV library.
- Prognosing Idiopathic Pulmonary Fibrosis** Dec 2020 - Jun 2021
- Predicted the future lung volume of Idiopathic Pulmonary Fibrosis patients with Tensorflow2, Pandas, and Scikit-learn.
 - Implemented an auto-encoder, linear regression, dense neural network, and Bayesian model.
- C++ Blackjack** Apr 2021 - Jul 2021
- Used object oriented programming to implement a blackjack game which the computer plays as the house.
- Javascript Conway's Game of Life** Apr 2020 - Mar 2020
- Created a javascript web version of Conway's Game of Life where generations can be simulated.

Achievements

- 10th in Canada, **Asian Pacific Mathematics Olympiad** 2022
- 11th in Canada, **Canadian Association of Physicists High School Exam** 2022
- 2 time qualifier, 18th in Canada, **Canadian Mathematical Olympiad** 2021 - 2022
- Ranked 12th in Canada and 17th internationally, **Sir Isaac Newton Physics Exam** 2021 - 2022
- Invited to write, **United States of America Mathematical Olympiad** 2022
- Bronze medalist, **Canada Wide Science Fair** 2021

Experience

- Tektorch.ai** Apr 2022 - Aug 2022
Part-time junior programmer Online
- Learned web scraping, the project design process, and some basic data manipulation with python.
- Mathematics Competition Teacher** Aug 2021 - June 2022
Voluntary math competition teacher Calgary, AB.
- Taught 4 children competition mathematics every week for 90 minutes after school.
- Code Ninjas West Springs** Mar 2022 - Apr 2022
Part-time code sensei Calgary, AB.
- Mentored young students and helped them complete programming challenges in scratch, makecode, and javascript.
- University of Alberta** Jul 2021 - Aug 2021
Computing Science High School Intern Online
- Analysed and created graphs of mouse position data during a psychology experiment.
 - Created natural language processing models to help determine the cause of a change in depressive language in Tweets.

Education

- University of Waterloo** 2022 - Present
Bachelor of Computer Science Waterloo, ON.
- Admitted with the Ronald G. Dunkley National Scholarship and the President's Entrance Scholarship of Distinction.
 - Plan on doubling majoring in pure math and computer science.
- Webber Academy** 2008 - 2022
Webber Scholar from grade 6 to 12 Calgary, AB.
- President of the Student Union and annual merit scholarship recipient.