Albert Yang

University of Waterloo 2A CS Student

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PROFESSIONAL SKILLS

Languages: Python, JavaScript, C#, C, C++, HTML, SQL, CSS, Racket, Bash, R
Frameworks/Libraries: Pytorch, Pyro, Gymnasium, Matplotlib, Numpy, Pandas, Git, React, TensorFlow

EXPERIENCE

AI/ML Engineer 2024: Sept-Dec
Sick Kids Hospital

- Built a Bayesian neural network that predicted the lengths of convex / concave rods used in AIS corrective surgery. Achieved 5.5mm mean error on both rod lengths. Quantified uncertainty in predictions producing under 5mm errors on predictions with high certainty.
- Implemented a DDPG on a custom-built environment to produce the optimal series of bending for each patient. Algorithmically provided instructions on how to bend patient-specific surgical rods for physicians.
- Built a robust full stack application allowing surgeons to easily specify rod shape for surgery.
- Independently researched medical and ML concepts

Waterloo Rocketry Software Developer 2024: Mar-Dec
Waterloo Rocketry

- Contributed to a team with over 100+ active members with a Git-based source control.
- Migrated documentation and data across websites using reStructuredText (RST) to enhance accessibility and coherence on GitHub Pages

PROJECTS

SVG/Drawing to Fourier Epicycles — JavaScript, HTML, CSS : Link

- Built an efficient program that applied Fourier transform to SVG images, translating over **10,000** data points into a Fourier series.
- Transformed real-time user drawings into a series of spinning epicycles

Chess AI — Python : Link

- Utilized Google Colab Notebook to create an estimated Chess AI
- Achieved an estimated **1400** Chess.com rating using the min-max algorithm
- Optimized Chess AI to run over **10** times faster than a traditional min-max algorithm by implimenting alpha-beta pruning

Personal Website — TypeScript, JavaScript, CSS, React, HTML : Link

- Created an interactive, mobile friendly website with smooth transitions and responsive design for optimal user experience
- Developed an infinite carousel showcase feature using HTML, CSS, React, and JavaScript

Wolfram Cellular Automata — JavaScript, HTML : Link

- Accurately simulate over **250000** cells in a unique Belousov Zhabotinsky chemical reaction.
- Optimize simulation to run over **4** times faster by directly accessing the RGB array rather than creating **250000** individual objects

EXTRACURRICULARS

Math Competitions

- 2021 Galois Honour Roll Group 5, 2021 Cayley Honour Roll Group 2, 2022 Fermat Honour Roll Group 5, 2022 Euclid Certificate of Distinction, 2023 Euclid Certificate of Distinction

EDUCATION

Bachelor of Computer Science (BCS)
Year of enrollment: 2023
University of Waterloo — Faculty of Math

- University of Waterloo 2024 President's Scholarship of Distinction recipient
- University of Waterloo 2024 Nortel Institute Scholarship recipient