

YOUYOU YANG

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EDUCATION

- **McGill University** Montréal, CA
Master of Science in Computer Science (Non-Thesis) Sept. 2024 – Present
- **McGill University** Montréal, CA
Bachelor of Science in Physics and Computer Science Aug. 2019 – June. 2023
 - **Relevant Coursework:** Data Science, Machine Learning, Algorithm Design, Quantum Mechanics, Astrophysics, Mathematical Analysis, Algebra and etc.

SKILLS

- **Technical Skills:**
 - **Data Science Skills:** Experienced in Python for data analysis and machine learning, adept in using libraries such as NumPy, SciPy, Pandas, Seaborn, TensorFlow, and Scikit-learn.
 - **Programming Skills:** Proficient in C, Bash, mySQL, Ocaml, and Matlab for software development, scripting, database management, and scientific computing.
 - **Hardware Design:** Familiar with Arduino and Raspberry Pi platforms.
 - **Tools and OS:** Experienced with JIRA and Git for version control, and L^AT_EX for document preparation.
- **Language Skills:** Fluent in English and Mandarin. Basic proficiency in French and Japanese.

WORK EXPERIENCE

- **BorgWarner Technical center** Shanghai, CN
Software Development Intern July 2021 - August 2021
 - **Developed Communication Protocol:** Engineered AutoSAR-based communication protocols for Geely Lotus cars, optimizing efficiency with **Python-to-C** scripts.
 - **Led Upper Computer Modularization:** Led software modularization for an automated car project. Achieving timely and accurate transportation using the **Python ROS** package, and Bash script on **Raspberry Pi**, ensuring project success.
- **Dreame Tech** Suzhou, CN
Software Testing Intern May 2021 - June 2021
 - **Firmware Testing and Debugging:** Employed systematic testing methodologies on Dreame Z10 Robot Vacuum cleaner using **Bash** scripts. Effectively managing issues and tracking progress through **Jira** for streamlined development and quality assurance.

RESEARCH EXPERIENCE

- **McGill ATLAS Group** Montréal, CA
Research Assistant May 2023 - August 2023
 - **Research on Digital Filtering Algorithms for ATLAS Liquid Argon Calorimeter:**
 - * Supervised by Prof. Brigitte Vachon.
 - * Funded by the Natural Sciences and Engineering Research Council (**NSERC**).
 - * Applied **Python** to develop and identify the optimal **digital filtering** solution for energy reconstruction in the ATLAS calorimeter at CERN, integrating **time series analysis** techniques for enhanced signal processing.
- **McGill ATLAS Group** Montréal, CA
Undergraduate Researcher May 2022 - Dec 2022
 - **Studies of gauge bosons self-interactions in high-energy proton-proton collisions:**
 - * Supervisors: Prof. Brigitte Vachon and John McGowan.

- * Funded by McGill Science Undergraduate Research Awards (**SURAs**).
- * Employed PyROOT for data analysis within the frame of Standard Model Effective Field Theory(**SMEFT**), to search for unique particle interactions.
- * Utilized **MLE** methods in **Python** to setting constrains on Effective Field Theory Lagrangian, accounting for systematic uncertainties.

TECHNICAL PROJECTS

- **May 2023 - July 2023: Developing a Chinese Restaurant Process (CRP) with Gibbs Sampling:**
Implemented **Gibbs sampling** in a CRP model in **Python** to solve **infinite Gaussian mixture modeling** challenges. Extended the traditional **CRP** model to accommodate an unbounded number of mixture components, enabling flexible modeling of complex data distributions.
- **May 2022: Measuring of Lambda Cold Dark Matter parameters with MCMC:**
Employed the Markov chain Monte Carlo (**MCMC**) method in **Python** to fit the **CMB** data to the **Λ CDM model**, focusing on the density parameters and Hubble's constant.
- **May 2022: Monte Carlo Tree Search for the Colosseum Survival game:**
Built an intelligent agent using **Monte Carlo Tree Search (MCTS)** for the Colosseum Survival game strategy. Outperformed most random opponents with efficient next-step predictions and **minimal memory** usage.

ADDITIONAL EXPERIENCE

- **Published Documentation:**
 - **Jul 2022:** J. P. Mc Gowan, Z. Wang, B. P. Honan, *et al.*, "Observation and differential measurement of electroweak production of $W(l,\nu)\gamma + \text{jets}$," CERN, Geneva, Tech. Rep., 2022. [Online]. Available: <https://cds.cern.ch/record/2819968>
 - **Mar 2024:** A. Collaboration, *Fiducial and differential cross-section measurements of electroweak $W\gamma jj$ production in pp collisions at $\sqrt{s} = 13$ tev with the atlas detector*, 2024. [Online]. Available: <https://arxiv.org/abs/2403.02809>
- **Talks:**
 - **Aug 2022:** Summer Undergraduate Research Showcase, McGill University
Contributed talk: *Sensitivity studies in the search for new physics in p - p collisions at the LHC.*
 - **Aug 2022:** ATLAS Canada Summer Student Presentations, CERN
Contributed talk: *Sensitivity studies in the search for new physics in p - p collisions at the LHC (same).*
- **Hackathon:**
 - **Jan 2022:** Hack Mcwics 22, McGill Women in Computer Science: Won the Most Practical Award for developing a website of Serving Size Converter using **HTML+JavaScript**.