

# YOUYOU YANG

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## EDUCATION

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- **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.

## RESEARCH EXPERIENCE

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- **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).
    - \* Developed and implemented **digital filtering algorithms** in **Python** for enhanced energy reconstruction in the ATLAS calorimeter at CERN, integrating **least squares** 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 **Maximum Likelihood Estimation** (MLE) in **Python** to set constraints on Effective Field Theory Lagrangian.

## WORK EXPERIENCE

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- **BorgWarner Technical center** Shanghai, CN  
*Software Development Intern* July 2021 - August 2021
  - **Engineered AutoSAR Communication Protocols:** Designed and implemented AutoSAR-based communication protocols for Geely Lotus cars, optimizing data transmission efficiency using **Python-to-C** scripts.
  - **Modularized Software for Automated Car Project:** Led software modularization, ensuring reliable and timely data transmission using **Python ROS** package and **Bash scripts** on **Raspberry Pi**, ensuring project success..
- **Dreame Tech** Suzhou, CN  
*Software Testing Intern* May 2021 - June 2021
  - **Firmware Testing and Debugging:** Employed systematic testing on Dreame Z10 Robot Vacuum cleaner using **Bash** scripts. Effectively managing issues and tracking progress through **Jira** for streamlined development and quality assurance.

## TECHNICAL PROJECTS

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- **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  **$\Lambda$ CDM model**, focusing on the density parameters and Hubble's constant.
- **Designed and Analyzed Electrocardiogram (ECG) Circuit:** March 2023  
Constructed an ECG circuit including a differential amplifier, notch filter, and low-pass filter, resulting in clear and complete ECG readings.

## ADDITIONAL EXPERIENCE

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- **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**.

## SKILLS

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- **Technical Skills:**
  - **Programming** Proficient in **Python** for data analysis and machine learning. Experienced in **C**, **Bash**, **mySQL**, Ocaml, and Matlab.
  - **Platforms:** Familiar with **Linux**, **Arduino** and **Raspberry Pi**.
  - **Tools:** Experienced with **JIRA**, **Git** for version control, and **L<sup>A</sup>T<sub>E</sub>X** for document preparation.
- **Language Skills:** Fluent in English and Mandarin. Basic proficiency in French and Japanese.