YOUYOU YANG

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Education

- **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 Sience Skills:** Python with experience in libraries such as NumPy, SciPy, Pandas, TensorFlow, and Scikit-learn.
  - **Programming Skills:** C, Bash, SQL, Ocaml and Matlab. Basic knowledge in HTML, CSS, and JavaScript.
  - **Hardware Design:** Familiar with Arduino and Raspberry Pi.
  - **Tools and OS:** Skilled in Linux, JIRA and Git for version control, and LaTeX. Familiar with Microsoft Office.
- **Language Skills**: Fluent in English and Mandarin. Basic proficiency in French.
- **Soft Skills**: Adapted to multiple programming languages and frameworks in a short period.

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, boosting efficiency with **Python-to-C** scripts.
  - **Led Upper Computer Modularization**: Spearheaded software modularization for an automated car project, achieving timely and accurate transportation using the **Python ROS** package, and Bash script on **Raspberry Pi**.

- **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; managed issues using **Jira**.

Research Experience

- **McGill ATLAS Group** Montréal, CA
  Undergraduate Researcher *May 2023 - August 2023*
  - **Research on Digital Filtering Algorithms for ATLAS Liquid Argon Calorimeter**:
    - Supervised by Prof. Brigitte Vachon, Alessandro Ambler.
    - Funded by the Natural Sciences and Engineering Research Council (**NSERC**).
    - Utilized **Python** to implemented and found the most effective **digital filtering** solution for energy reconstruction in ATLAS calorimeter at CERN.
- **McGill ATLAS Group** Montréal, CA
  Undergraduate Researcher *May 2022 - Dec 2022*
  - **Setting constrains on Effective Field Theory Lagrangian**:
    - Supervisors: Prof. Brigitte Vachon and John McGowan.
    - Employed **MLE** methods in **Python** to rigorously estimate Lagrangian parameters, accounting for systematic uncertainties.
  - **Studies of gauge bosons self-interactions in high-energy proton-proton collisions**:
    - Supervisors: Prof. Brigitte Vachon, John McGowan and Xingguo Li.
    - Funded by McGill Science Undergraduate Research Awards (**SURA**s).
    - Employed PyROOT for data analysis within the frame of Standard Model Effective Field Theory(**SMEFT**), to search for unique particle interactions..

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.
- **Apr 2023: Building an Electrocardiogram (ECG) with Circuit and Arduino**: Engineered an ECG **circuit** including a differential amplifier, notch filter, and low-pass filter, and visualized signals using **Arduino** and oscilloscope.
- **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 **ΛCDM 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 + jets," CERN, Geneva, Tech. Rep., 2022. [Online]. Available: https://cds.cern.ch/record/2819968
- **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**.