Youyou Yang

+1 (438)-941-6404 | youyou.yang@mail.mcgill.ca
HomePage | GitHub | LinkedIn

Education

Master of Science | Computer Science (Non-Thesis) Sep 2024 – Dec 2025
McGill University, Montréal, Canada
- Selected Courses: ML in Genomics, Reinforcement Learning, NLP, Brain-Inspired AI, Computational Perception.
- Research interests: Cognitive-Inspired AI, NeuroAI, LLMs, High-Performance Computing.

Bachelor of Science | Physics and Computer Science Aug 2019 – Jun 2023
McGill University, Montréal, Canada

Research Experience

Simulated Eye Movement Prediction with SimVP | McGill M2B3 Lab May – Dec 2025
Supervised by Prof. Suresh Krishna
- Independently proposed and led a cross-disciplinary project on human-like eye movement modeling via spatiotemporal video prediction.
- Developed an end-to-end data pipeline: simulated scanpath sequences with biologically-inspired sampling, created evaluation metrics. Optimized SimVP-gSTA model training on Compute Canada HPC.

Implicit Skill Extraction with LLMs | McGill University and TMU May – Aug 2025
Supervised by Prof. Alejandro Gutiérrez López and Prof. Lorena Escandon
- Initiated and executed a multi-evidence validation framework to distinguish implicit skills from LLM hallucinations in job posting analysis in creative industry.
- Integrated industry taxonomy matching, semantic coherence (SentenceTransformers), and co-occurrence pattern analysis. Led all experiment design, prompt engineering, and LLM model deployment.

Digital Filter for LAr | McGill ATLAS Group May – Aug 2023
Supervised by Prof. Brigitte Vachon
- Developed and analyzed digital filtering algorithms for precise energy reconstruction of particle collision events in CERN using least squares optimization.

Sensitivity in Vector Boson Coupling | McGill ATLAS Group May – Dec 2022
Supervised by Prof. Brigitte Vachon and Dr. John McGowan
- Conducted sensitivity study of gauge boson self-interactions in proton-proton collisions at CERN.
- Utilized Maximum Likelihood Estimation for statistical modeling and data interpretation.

Technical Projects

Fovea Attention Model with Active Sensing (attempt) Jun 2025 – Present
- Reimplemented foveated vision model; integrated Bayesian active sensing loop (ongoing).

Offline Reinforcement Learning Apr 2025
- Implemented and evaluated BC, Offline DQN, and CQL on CartPole datasets (expert/random/mixed).
- Analyzed value estimation errors and performance under distribution shift using d3rlpy.

miRNA–mRNA Interaction Prediction with HyenaDNA Dec 2024
- Applied HyenaDNA foundation model to binary classify miRNA–mRNA interactions.
- Assessed model sensitivity through in-silico mutagenesis experiments.

Cosmological Parameter Estimation May 2022
- Developed the Markov Chain Monte Carlo methods to estimate ΛCDM model parameters from observational datasets.

Work and Teaching Experience

Graduate Teaching Assistant | McGill University, Montréal — Sep – Dec 2024
COMP 206: Introduction to Software

Software Development Intern | BorgWarner Technical Center, Shanghai — Jul – Aug 2021
- Engineered AutoSAR-based communication protocols for real-time vehicle systems at Geely Lotus.
- Led a team developing a ROS-based autonomous delivery cart; implemented motion planning modules.

Software Testing Intern | Dreame Tech, Suzhou — May – Jun 2021
- Employed systematic testing and quality assurance on Dreame Z10 Robot Vacuum cleaner with Jira.

Honours and Awards

Breakthrough Prize in Fundamental Physics | Team Award, ATLAS Collaboration — 2025
- Contributed to investigations of matter interactions as a member of McGill ATLAS Group.

GrIPECS Graduate Internship Award | CAD $8,000 — 2025
NSERC Undergraduate Student Research Award | CAD $6,000 — 2023
Science Undergraduate Research Award (**SURA**) | CAD $7,000 — 2022

Publications

[1] 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

[2] First-author, "Implicit Skill Extraction with LLMs: A Multi-Evidence Validation Framework," workshop submission in preparation.

Talks

Sensitivity studies for new physics in proton-proton collisions at the LHC
- ATLAS Canada Summer Student Presentations (CERN) — Aug. 2022
- Undergraduate Showcase (McGill) — Aug. 2022

Skills

Programming
- **Core AI/ML**: PyTorch, TensorFlow, Scikit-learn, NumPy/Pandas, Bayesian Modeling
- **Engineering**: HuggingFace Transformers, Apptainer/Docker, Git, Linux, HPC, Slurm, Model training, prompt engineering
- **Languages**: Python, C/C++, SQL, ROS, Bash, Matlab

Spoken Languages: English (fluent), Mandarin (native), French/Japanese (basic)