Yudong (Will) Xu

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Education

University of Toronto
M.ASc. Candidate in Mechanical & Industrial Engineering, GPA: 4.00/4.00 — 2021 –Present

University of Toronto
B.ASc. with Honors in Engineering Science, Machine Intelligence, GPA: 3.66/4.00 — 2016 –2021

- Certificate in Engineering Business

Professional Experience

Capital One
Software Engineer Co-op — 2019 –2020

- Developed a data processing pipeline in **Scala** for real-time decision-making machine learning models.
- Integrated pipeline with microservices using **Docker**, achieving 100% unit test coverage.
- Established CI/CD pipelines with **Jenkins** to streamline versioning and deployment processes.
- Significantly enhanced customer onboarding experience for credit card applications.

Research Experience

Are Large Language Models Logical Reasoners?
Supervisors: Prof. Elias B. Khalil and Prof. Scott Sanner — 2022 –Present

- Investigated the logical reasoning capabilities of large language models, such as **GPT-4**.
- Conducted experiments to assess the models' understanding of logic and consistency in reasoning.

Graphs, Constraints, and Search for the Abstraction and Reasoning Corpus
Supervisors: Prof. Elias B. Khalil and Prof. Scott Sanner — 2021 –2023

- Devised an innovative abstraction and reasoning framework for an **Artificial General Intelligence (AGI)** challenge, marking the first solution to be published at a top peer-reviewed venue.
- Implemented in **Python**, achieving a 100-fold efficiency improvement over state-of-the-art solutions.

Projects

Stroke Neurologists Demand Prediction
CorHealth Ontario — Fall 2020

- Designed **Deep Neural Network (DNN)** models with TensorFlow and **ARIMA** models to predict the demand for stroke neurologists in Ontario for the next decade, achieving a 70% accuracy rate.
- Developed data visualization tools and user interfaces for clients to analyze the results.

Volunteer Dashboard
Autism Ontario — Fall 2019

- Developed a volunteer portal for a local charity using **React** and **Drupal 8**, integrated with CiviCRM.
- Launched prototype back-end server using **AWS EC2** and **AWS S3** buckets.

Publications

[1] Y. Xu, E. B. Khalil, and S. Sanner, "Graphs, constraints, and search for the abstraction and reasoning corpus", in *Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI-23)*, Washington D.C., USA, 2023.

Skills

- **Programming:** Python, Java, Scala, C, C++, R, Matlab, SQL, JavaScript.
- **Machine Learning:** PyTorch, TensorFlow, Scikit-learn, GPT.
- **Software Engineering:** Jenkins, Docker, GitHub, AWS, Kanban, Agile.