# Tom(Tianze) Yang

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## SKILLS

- Senior student researcher with 2+ years of experience in conducting data analysis through ML and statistical methods.
- Proficient in Python(Flask, Pytorch, Transformers, Tensorflow, Pandas), Docker, R, SQL, Latex
- Great experience with LLM prompt engineering & fine-tuning, CUDA, Linux, Ubuntu, Google Cloud, Time-Series analysis
- Fluent in English, Chinese, and French(intermediate)

## PUBLICATION:

- AI Clinics on Mobile (AICOM): Universal AI Doctors for the Underserved and Hard-to-Reach (*Connection Science*,co-First Author)
- AICOM-MP: an AI-based Monkeypox Detector for Resource-Constrained Environment (*ArXiv*,co-First Author,sent for peer-review)

## EDUCATION

**McGill University** **Montreal, CA**

M.Sc.(Thesis) in Computer Science, Supervisor: Prof. Xue Liu. GPA: 4.00 *Sep 2023 - Present*

B.Sc. in Honours Probability and Statistics(DS & ML Path), Minor Computer Science, GPA: 3.85 *Sep 2020 - May 2023*

## PROFESSIONAL EXPERIENCE

**Nebula AI** **Montreal, CA**

AI Engineer *Sep 2023 - present*

- Developed Stroke prediction AI using Transformers, Statistical Methods, QLoRA, and Python, achieved top 1-5% accuracy.
- Developed the Model Manager plugin for ComfyUI, utilizing Node.js, Docker, HTML, and CSS, to enable custom downloading of models.
- Created Generative Art NFT using Chainlink Functions, Stable Diffusion models, Multi-Chain Storage, python, Docker, html, css, js
- Developed and implement a system to generate data NFTs using Stable Diffusion, IFPS, and Python
- Built and deployed LLM and generative AI on web3OS Lagrange Space using Flask, Docker, Transformers, and Python

**McGill University & MILA** **Montreal, CA**

Project co-Leader, Research Intern *Sep 2022 – Present*

- Designed a language-model-based algorithm to conduct data engineering tasks using In-context learning, Scikit Learn, Transformers.
- Design and optimize a LLM-based medical AI, using Transformers, QLoRa, LlamaIndex, LangChain, and Python
- Developed the State-of-the-Art Monkeypox Screening AI using Python Tensorflow, reached >98% accuracy and > 1000 downloads.
- Developed an AI-powered Android App using Android Studio and float-16 quantization, achieved >98% accuracy
- Designed a website and deployed a Monkeypox screening AI to its web interface, using Angular, Python Flask, Google Cloud

**Shenzhen Institute of Computing Science** **Shenzhen, China**

NL2SQL Project Leader, Research Intern *Jun 2023 - Sep 2023*

- Developed a LLM-based text parser using Python Transformers and Llama2-7b, achieved 70% accuracy on the task of transforming natural language to SQL Query (NL2SQL)
- Fine-tuned Llama2-7b for NL2SQL task using QLoRa and Peft, achieved 187.56% improvement in execution accuracy.
- Augmented Llama2-7b for NL2sQL task using Chain-of-Thought, few/zero-shot prompting, role-play prompting techniques, achieved 123.5% improvement in execution accuracy
- Implemented a NL2SQL engine for YashanDB using Python and BASH

**McGill University** **Montreal, CA**

AI Research Intern *Jul 2021- May 2023*

- Implemented and deployed a public academic forum named OmicsForum (with over 725 users) using discourse, docker in Ubuntu
- Designed, trained, and deployed a chatbot on MetaboAnalyst, which has been used by >500,000 researchers, using Python, JS, JAVA
- Built a metabolomic tools search engine for SystemsAnalyst using open-source software MeiliSearch

## RELEVANT RESEARCH EXPERIENCE

**McGill University** **Montreal, CA**

Quantitative risk analysis, PI: Prof. Christian Genest *Sep 2022 - Jan 2023*

- Developed a Time-Series model of the Value-at-Risk of cryptocurrencies using ARMA+GARCH framework and R
- Examined the correlation between cryptocurrencies using Copula method and R

Machine Learning, PI: Prof. Jean-Baptiste Poline *Sep 2021 - May 2022*

- Extracted database usage rate from neuroscience articles using Linear Regression & Neural Network, achieved >80% accuracy
- Pre-processed neuroscience articles using data cleaning tools and Python.

## HONORS & AWARDS

- Master of Science Stipend(2023-present)
- First-Class-Honours in Probability and Statistics (2023)
- William Macdonald Scholarship (2020-2023)
- Research Assistant Stipend at XiaLab (2021-2023)
- Research Assistant Stipend at Weichenthal's Lab (2021)
- McGill Science Dean's Honor List, Wing Hing Chan Scholarships in Science (2020-2021)
- McGill Emerging Leaders Certificate (2021)
- Governor General of Canada, Bronze (2018)