Tom(Tianze) Yang

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SKILLS

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

PUBLICATION:

- AI Clinics on Mobile (AICOM): Universal AI Doctors for the Underserved and Hard-to-Reach (ArXiv,co-First Author,sent for peer-review)
- 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 — *Starting in Sep 2023*

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

---- GPA: 3.85

PROFESSIONAL EXPERIENCE

Nebula AI — **Montreal, CA**

ML Developper — *Sep 2023-present*

- Build and deploy LLM and generative AI on web3OS Lagrange Space using Llama 2, Stable Diffusion, Docker, Python

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

NL2SQL Project Leader, Research Intern, PI: Dr. Weijie Ou — *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-tb for NL2sQL task using Chain-of-Thought, few/zero-shot prompting, role-play prompting techniques, achieved 123.5% improvement in execution accuracy
- Gained hands-on experience of YashanDB on Linux and built a NL2SQL engine for YashanDB using Python and BASH.

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

Project co-Leader, Research Intern, PI: Prof. Xue Liu, Dr, Shaoshan Liu — *Sep 2022–Present*

- 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
- Entered MIT Solve challenge

McGill University — **Montreal, CA**

AI Research Intern, PI Prof: Jianguo Xia — *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 analyst, 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

ML Intern, PI: Prof. Jean-Baptiste Poline — *Sep 2021-May 2022*

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

HONORS & AWARDS

- 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 (2020-2021)
- Wing Hing Chan Scholarships in Science (2020-2021)
- McGill Emerging Leaders Certificate (2021)
- Huawei Seeds for the Future Certificate (2021)
- Earnest Fox Award of Mechanics, Marianopolis College Scholar, Marianopolis College Entrance Scholarship (2018)

ML Intern, PI: Prof. Yi Yang *Mar 2022-Sep 2022*

- Learned and applied reinforcement Learning Techniques such as Multi-armed Bandits and finite markov decision process using Python

ML Engineer, PI: Prof. Jean-Baptiste Poline *Sep 2021-May 2022*

- Pre-processed neuroscience articles through data cleaning tools using Python
- Evaluated neuroscience datasets usage status using Sequential Neural Network, Bayesian Regression, Logistic Regression

Research Assistant, PI: Prof. Scott Weichenthal *May 2021-Sep 2021*

- Designed routes for data collection process
- In charge of setting up equipments and collecting environmental data, such as the density of black carbon in different areas of Montreal

Senior student researcher and ML engineer with 3+ years of experience delivering solutions to data analysis tasks through mathematical methods(Time-Series Modeling, Copula, etc.), deep learning(DL), web-based AI agent, full-stack developer tools, and low-end mobile application . Proven success in analyzing the value-at-risk(VaR) analysis of cryptocurrencies, developing state-of-the-art DL applications in a resource-constrained environment, and forum engineering.