

Ruiyu Wang

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EDUCATION

University of Toronto

Toronto, ON

B.Sc (Hons), Computer Science Specialist, Focus in NLP, cGPA 3.67

Aug. 2020 - Jun 2024 (expected)

- Dean's list scholar 2020 - 2023
- New College in-course scholarship holder 2020-2023

RESEARCH INTEREST

Natural Language Processing: How does brain extract meaning from language input, integrate it with prior knowledge, and generate appropriate responses, how to simulate and replicate these processes by computational models, and how to use the techniques to break down the language barriers and facilitate global communication.

Large Language Models: What are the underlying mechanisms that support the exceptional performance of LLMs, is Next-Token Prediction a promising approach for advancing general intelligence, and how can LLMs be effectively employed in real-world applications.

RESEARCH EXPERIENCE

Undergraduate Researcher

StatsLE, University of Toronto

Sep 2023 - Present

Toronto, ON

- Worked on non-natural-language input of large language models, i.e. the transformation of arbitrary objects (graphs, figures) to LLM embeddings.
- Supervised by Prof. Qiang Sun

Undergraduate Researcher

Mathematical Linguistics Group, University of Toronto

May 2023 - Present

Toronto, ON

- Worked on embeddings and vector distributions of language models
- Supervised by Prof. Gerald Penn

Jan. 2023 - Jun. 2023

Toronto, ON

- Worked on human studies and the metrology of NLP
- Supervised by Prof. Gerald Penn
- Paper draft: *Is Human All We Need? - On the Human Studies of Natural Language Generation*

Visiting Undergraduate Researcher

SunStella, University of Illinois Urbana-Champaign

May 2023 - Oct 2023

Champaign (remote), IL

- Worked on LLM approach of universal tabular prediction
- Supervisor: Prof. Jimeng Sun
- Paper preprint: *UniPredict: Large Language Models are Universal Tabular Predictors*

Independent Researcher

Department of Computer Science, University of Toronto

Jan. 2023 - May 2023

Toronto, ON

- Led a group of students working on the feasibility of layerwise loss function on the Forward-forward Network
- Achieved a 9% absolute accuracy increase on MNIST compared to foundational structures such as MLP/FCNN
- Project report: *A Multi-Head Forward-Forward Network*

WORK EXPERIENCE

Tech Lead & Executive Member

University of Toronto Application Development Association

Sept. 2020 - Present, Part-time

Toronto, ON

- Developed a Smart Timetable using Typescript and Python in 2020
- Promoted as the Tech Lead in summer 2022, led a blockchain research team
- Conducted a research for blockchain transaction compatibility in ERC20 Tokens

Data Analyst Intern

Tencent Ltd.

June 2022 - Aug 2022, Contract Full-time

Shanghai (remote), China

- Performed data mining, data reshaping and analyzing by Python
- Familiarized with various data analyzing tools such as Numpy and Pandas
- Provided visualization for marketing

HIGHLIGHT OF QUALIFICATION

Tools: PyTorch, Numpy, Pandas, L^AT_EX, Git, SpaCy, NLTK, HuggingFace (non-exhaustive)