Chenkai Ma

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Education

Ph.D. in Computer Science, National University of Singapore (NUS) *07/2024 - Present*

Research Interests: Multi-Armed Bandit, Online Learning.
Supervisor: Jonathan Scarlett.

M.S., University of Electronic Science and Technology of China (UESTC) *09/2021 - 06/2024*

Major in Computer Science and Technology.
GPA: 3.95/4.0; Supervisor: Ke Qin.

B.S., University of Electronic Science and Technology of China (UESTC) *09/2017 - 06/2021*

Major in Software Engineering.
GPA: 3.98/4.0.

Publications

[1] POE: Process of Elimination for Multiple Choice Reasoning
Chenkai Ma, Xinya Du.
EMNLP 2023 [Paper].

[2] Prompt Engineering and Calibration for Zero-Shot Commonsense Reasoning
Chenkai Ma.
Tiny Papers @ ICLR 2023 [Paper].

Research Experience

Refinements and Extensions of Batched Kernel Bandit Algorithms

Advised by Jonathan Scarlett (NUS) *12/2024 - Present*

- Refined and extended previous works on batched kernel bandit algorithms.

Process of Elimination for Multiple Choice Reasoning

Advised by Xinya Du (UT Dallas) *04/2023 - 12/2023*

- Developed a prompting technique enabling language models to mimic human-like elimination processes in multiple-choice reasoning tasks.
- Showcased the method's efficacy, notably in logical reasoning tasks.

Prompt Engineering and Calibration for Zero-Shot Commonsense Reasoning

Independent Project *02/2023 - 05/2023*

- Explored the impact of prompt engineering and calibration on enhancing small language models in multiple-choice commonsense reasoning.
- Concluded that optimal methods differ by model, but their combination often reduces performance.

Mitigating the Surface Form Problem in Unsupervised Commonsense Reasoning by Prefixing and Reweighting

Advised by Forrest Sheng Bao (ISU) *09/2022 - 05/2023*

- Proposed two unsupervised methods to debias language models from favoring options with common surface (literal) forms in multiple-choice reasoning tasks.
- Achieved consistent gains across models like GPT-2, GPT-3, and FLAN-T5.
- Initially submitted research to EACL 2023, later revised and resubmitted to ACL 2023.

A Chinese Relation Extraction System Based On Pretrained Language Models

Co-advised by Ke Qin (UESTC) and Dayong Zhu (UESTC) *10/2020 - 05/2021*

- Proposed three modifications to a baseline relation extraction system for better performance and efficiency.
- Secured rankings of 128/2148 in the first round and 60/102 in the second during the 2021 Language and Intelligence Challenge (Multi-format Information Extraction task).
- Concluded as an undergraduate project.

3D Map Reconstruction and Real Time Localization

Advised by Yong Liao (UESTC) *09/2019 - 05/2020*

- Conducted an in-depth literature review on Simultaneous Localization and Mapping (SLAM) and enhanced an established SLAM framework.

Teaching Experience

Embedded System Design *02/2020 - 05/2020*
Teaching Assistant Instructor: Yong Liao

Service

Conference Reviewer
ACL 2023, EMNLP 2023.

Technical Strengh

Programming Languages	Python, C++, Java, HTML.
Frameworks	Huggingface, Pytorch, PaddlePaddle.
Data Science	NumPy, Matplotlib, pandas.
Tools	Visual Studio, Git, Anaconda.

Honors and Awards

Honored Undergraduate Students of Sichuan *2021*
1st Prize, 10th Mathematics Competition of Chinese College Students *11/2018*
China National Scholarship *2018*