

JIE RUAN

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Research Interest: Natural Language
Processing, Machine Learning



EDUCATION

University of Michigan | *PhD Student*

Aug. 2024 - Now

Computer Science and Engineering

Peking University | *Master*

Sept. 2021 - July 2024

Computer Applied Technology

GPA: 3.87/4.0

Courses: Artificial Intelligence (A+); Analysis of Algorithms and Complexity Theory (A+); Research Qualities and Research Methods (A+); Computer Vision (A+); Presentation and Public Speaking (A+)

MAIN RESEARCH ACHIEVEMENTS¹

Manuscripts and Pre-prints

Mingqi Gao, **Jie Ruan**, Renliang Sun, Xunjian Yin, Shiping Yang and Xiaojun Wan*. Human-like Summarization Evaluation with ChatGPT. arXiv preprint arXiv:2304.02554, 2023. [Link](#)

Peer-reviewed Conference and Journal Publications

Jie Ruan, Wenqing Wang and Xiaojun Wan*. Defining and Detecting Vulnerability in Human Evaluation Guidelines: A Preliminary Study Towards Reliable NLG Evaluation[C]//Proceedings of the 2024 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (Volume 1: Long Papers). 2024: 7958-7982. (Outstanding Paper Award, Main conference, Long Paper) [Link](#)

Jie Ruan, Xiao Pu, Mingqi Gao, Xiaojun Wan* and Yuesheng Zhu. Better than Random: Reliable NLG Human Evaluation with Constrained Active Sampling[C]//Proceedings of the AAAI Conference on Artificial Intelligence. 2024, 38(17): 18915-18923. (Long Paper) [Link](#)

Jie Ruan, Yue Wu, Xiaojun Wan* and Yuesheng Zhu. How to Describe Images in a More Funny Way? Towards a Modular Approach to Cross-Modal Sarcasm Generation[C]//Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision. 2024: 5701-5710. [Link](#)

Mingqi Gao, **Jie Ruan** and Xiaojun Wan*. A Reproduction Study of the Human Evaluation of Role-Oriented Dialogue Summarization Models. HumEval at RANLP 2023. The 3rd Workshop on Human Evaluation of NLP Systems (HumEval'23) [Link](#)

Mingqi Gao, **Jie Ruan** and Xiaojun Wan*. ReproHum# 0087-01: A Reproduction Study of the Human Evaluation of the Coverage of Fact Checking Explanations[C]//Proceedings of the Fourth Workshop on Human Evaluation of NLP Systems (HumEval) LREC-COLING 2024. 2024: 269-273. [Link](#)

Xunjian Yin, Xu Zhang, **Jie Ruan** and Xiaojun Wan*. Benchmarking Knowledge Boundary for Large Language Model: A Different Perspective on Model Evaluation. Accepted by ACL 2024 [Link](#)

Mingqi Gao, Xinyu Hu, **Jie Ruan**, Xiao Pu and Xiaojun Wan*. LLM-based NLG Evaluation: Current Status and Challenges. arXiv preprint arXiv:2402.01383, 2024. (Computational Linguistics) [Link](#)

Jie Ruan, Zhenyu Weng, Jian Zhang, Yuqin Wang, Longhui Yu, Qiankun Gao and Yuesheng Zhu*. Style Expansion Without Forgetting for Handwritten Character Recognition[C]//International Conference on Artificial Neural Networks. Cham: Springer Nature Switzerland, 2023: 172-184. (Oral) [Link](#)

Yindong Chen*, **Jie Ruan** and Xuxi He. Constructing Even-variable RSBFs with Higher Nonlinearity, Optimal AI and good FAI[J]. Journal of Applied Mathematics and Computing, 2021. (1st student author, SCI Q1, Oral in 2019)

¹* : corresponding author

China Cryptology Annual Conference, Personal Work: Independently construct functions, write programs for experimental validation, prove properties of functions, and write research papers) [Link](#)

Zhun Fan*, **Jie Ruan**, Wenji Li, Yugen You, Xinye Cai, Zelin Xu, Zhi Yang, Fuzan Sun, Zhaojun Wang, Yutong Yuan, Zhaocheng Li and Guijie Zhu. A Learning Guided Parameter Setting for Constrained Multi-Objective Optimization[C]//2019 1st International Conference on Industrial Artificial Intelligence (IAI). IEEE, 2019: 1-6. (**1st student author**, Oral, Personal Work: Independently conducted the entire process of method design, experimental implementation, and paper writing) [Link](#)

Yindong Chen*, Fei Guo, **Jie Ruan**. Constructing odd-variable RSBFs with optimal algebraic immunity, good nonlinearity and good behavior against fast algebraic attacks[J]. Discrete Applied Mathematics, 2019. (2nd student author, SCI Q1) [Link](#)

Anya Belz, Craig Thomson, Ehud Reiter,..., **Jie Ruan** et al. Missing information, unresponsive authors, experimental flaws: The impossibility of assessing the reproducibility of previous human evaluations in NLP. Insights 2023: The Forth Workshop on Insights from Negative Results in NLP. Association for Computational Linguistics, 2023.

Patent

Yuesheng Zhu*, **Jie Ruan** and Zhenyu Weng. A Handwritten Chinese Character Recognition Method. Patent. (1st student author, Pass the first examination)

RESEARCH PROJECTS

ReproHum Project | *Project Member*

International Project Funded by EPSRC UK

Introduction: Develop of a methodological framework for testing the reproducibility of human evaluations in NLP, and of a multi-lab paradigm for carrying out such tests in practice, carrying out the first study of this kind in NLP.

Personal work: Participate in repeating human evaluation of a published paper and try to reproduce their results, using published information plus additional information and resources provided by the authors.

Inclusive Finance New Generation AI Open Innovation Platform | *Core Member*

National Science and Technology Innovation 2030 "New Generation Artificial Intelligence" Major Project

Introduction: For inclusive financial scenarios, carry out the research and development of visual intelligent perception technology, and further enhance the perception and recognition capabilities of computer vision.

Personal work: For the first time, the Style Expansion Learning Handwritten Character Recognition (StyleEL-HCR) problem was proposed, and a domain incremental learning method was designed to solve this problem. The experimental results verified the effectiveness of the proposed method for solving StyleEL-HCR, and the indicators met the final requirements of the project.

Research on Rotational Symmetric Boolean Function with Excellent Algebraic Immunity | *Project Leader*

National Student Innovation and Entrepreneurship Project

Introduction: Constructed a class of even-variable algebraic immune optimal rotation symmetric Boolean function and increased the non-linearity degree of the same kind of function over L boundary from $O(k)$ to $O(k^2)$. The function has reached the theoretical optimal value of similar functions in terms of balance, algebraic number, and fast algebraic immunity.

Personal work: Responsible for the construction of functions, the preparation of experimental demonstration programs, the proof of the properties of functions, and the writing of result papers.

Research on Construction of Boolean Function with Optimal Algebraic Immunity | *Project Leader*

Guangdong Student Science and Technology Innovation Cultivation Plan Project

Introduction: A new type of integer splitting method is introduced to construct a class of odd-variable algebraic immune rotation-optimal Boolean functions. The nonlinearity of the function is higher than that of all publicly available functions at that time. It can also effectively resist other types of attacks.

Personal work: Responsible for the construction of functions, the preparation of experimental demonstration programs, the proof of the properties of functions, and the writing of result papers.