

# Haozhe Ji (计昊哲)

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RESEARCH INTERESTS I am interested in large-scale language models and reinforcement learning algorithms, with particular focus on practical approaches with theoretical underpinnings.

EDUCATION **Tsinghua University**, Beijing, China September 2020 - Present  
*Ph.D. Student*, Computer Science and Technology  
*Advisor*: Minlie Huang

**Tsinghua University**, Beijing, China September 2016 - July 2020  
*B.E.*, Electronic Engineering

RESEARCH HIGHLIGHT **Towards Efficient Exact Optimization of Language Model Alignment**

- Policy optimization via probability matching, producing gradients that are unbiased estimators of the PPO gradient, with efficiency on par with DPO.

**Language Model Decoding as Direct Metrics Optimization**

- Developing energy-based language models subject to performance constraints and featuring theoretically-guaranteed perplexity improvement.

**Tailoring Language Generation Models under Total Variation Distance**

- Robust language generation training objective based on total variation distance.

TALK **Beyond the Theoretical Limits of Language Modeling** June 2024

**Towards Efficient Exact Optimization of Language Model Alignment** March 2024

## PREPRINTS

- PUBLICATIONS
- [1] **Towards Efficient Exact Optimization of Language Model Alignment**  
**Haozhe Ji**, Cheng Lu, Yilin Niu, Pei Ke, Hongning Wang, Jun Zhu, Jie Tang, Minlie Huang  
*International Conference on Machine Learning (ICML)*, 2024.
  - [2] **Language Model Decoding as Direct Metrics Optimization**  
**Haozhe Ji**, Pei Ke, Hongning Wang, Minlie Huang  
*International Conference on Learning Representations (ICLR)*, 2024.
  - [3] **Tailoring Language Generation Models under Total Variation Distance**  
**Haozhe Ji**, Pei Ke, Zhipeng Hu, Rongsheng Zhang, Minlie Huang  
*International Conference on Learning Representations (ICLR)*, 2023.  
*(Oral / Notable top 5%)*
  - [4] **Curriculum-Based Self-Training Makes Better Few-Shot Learners for Data-to-Text Generation**  
Pei Ke, **Haozhe Ji**, Zhenyu Yang, Yi Huang, Junlan Feng, Xiaoyan Zhu, Minlie Huang  
*International Joint Conference on Artificial Intelligence (IJCAI)*, 2022.

[5] **LaMemo: Language modeling with look-ahead memory**  
**Haozhe Ji**, Rongsheng Zhang, Zhenyu Yang, Zhipeng Hu, Minlie Huang  
*North American Chapter of the Association for Computational Linguistics (NAACL)*, 2022. (*Oral*)

[6] **DiscoDVT: Generating Long Text with Discourse-Aware Discrete Variational Transformer**  
**Haozhe Ji**, Minlie Huang  
*Empirical Methods in Natural Language Processing (EMNLP)*, 2021. (*Oral*)

[7] **Jointgt: Graph-text joint representation learning for text generation from knowledge graphs**  
 Pei Ke, **Haozhe Ji**, Yu Ran, Xin Cui, Liwei Wang, Linfeng Song, Xiaoyan Zhu, Minlie Huang  
*Findings of the Association for Computational Linguistics (Findings of ACL)*, 2021.

[8] **Language generation with multi-hop reasoning on commonsense knowledge graph**  
**Haozhe Ji**, Pei Ke, Shaohan Huang, Furu Wei, Xiaoyan Zhu, Minlie Huang  
*Empirical Methods in Natural Language Processing (EMNLP)*, 2020. (*Oral*)

[9] **Generating commonsense explanation by extracting bridge concepts from reasoning paths**  
**Haozhe Ji**, Pei Ke, Shaohan Huang, Furu Wei, Minlie Huang  
*Asia-Pacific Chapter of the Association for Computational Linguistics (ACL)*, 2020.

[10] **Sentilare: Linguistic knowledge enhanced language representation for sentiment analysis**  
 Pei Ke\*, **Haozhe Ji**\*, Siyang Liu, Xiaoyan Zhu, Minlie Huang  
*Empirical Methods in Natural Language Processing (EMNLP)*, 2020.

[11] **Denoising distantly supervised open-domain question answering**  
 Yankai Lin, **Haozhe Ji**, Zhiyuan Liu, Maosong Sun  
*Annual Meeting of the Association for Computational Linguistics (ACL)*, 2018.

RESEARCH EXPERIENCE	<b>CoAI Lab, Tsinghua University</b> <i>Ph.D. Candidate (Supervisor: Minlie Huang)</i>	September 2020 - Present
	<b>Alignment Group, Zhipu AI</b> <i>Research Intern (Supervisor: Hongning Wang)</i>	March 2024 - Present
	<b>Natural Language Comupting group, Microsoft Research Asia</b> <i>Research Intern (Supervisors: Shaohan Huang, Furu Wei)</i>	July 2019 - July 2020
AWARDS	<b>China National Scholarship</b>	2024
	<b>Tang Junyuan (唐君远) Scholarship</b> , Tsinghua University	2023
	<b>Sohu Scholarship</b> , Tsinghua University	2022
	<b>Yang Huiyan (杨惠妍) Scholarship</b> , Tsinghua University	2021
	<b>Comprehensive Merit Scholarship</b> , Tsinghua University	2019
	<b>Comprehensive Merit Scholarship</b> , Tsinghua University	2017
	<b>Gold Medal</b> , 32nd China Physics Olympiads (CPhO)	2015
SERVICES	<b>Distinguished Honor Roll</b> (Top 1%), American Mathematics Contest 12 (AMC12)	2015
	Reviewer/Program Committee: ACL, EMNLP, NAACL, ARR	
	Contributor of huggingface/trl	

## TEACHING

I was the Head TA of the undergraduate course Artificial Neural Network, instructed by [Minlie Huang](#) (2021 Fall, 2022 Fall, 2023 Fall).

I coauthored the NLP textbook *Modern Natural Language Generation* (in Chinese). Specifically, I mainly drafted the fourth chapter *Transformer-based Language Generation Model*.