

# Yu Gu

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## Brief Summary

Yu Gu is a final-year Ph.D. student at The Ohio State University, working on natural language processing (NLP) and foundation models. His current research centers on language agents, a new paradigm to realize generalist agents with the power of natural language. This is guided by the belief that natural language plays a crucial role in shaping human cognition by constraining the concept space and enabling the formation of complex ideas through the composition of concepts. He envisions that the remarkable language capabilities of modern AI will unlock unprecedented possibilities for developing generalist agents that learn and reason in ways more aligned with human cognition. His research has been disseminated through esteemed conferences. Notably, he has received the **Outstanding Paper Award** at both ACL and COLING as the first author.

## Education

### The Ohio State University

Ph.D. in Computer Science

• **Advisor:** Prof. Yu Su

Columbus, USA

Aug 2019 - Present

### Nanjing University

B.Sc. & M.Sc. in Computer Science

• **Advisor:** Prof. Gong Cheng

Nanjing, China

Sep 2012 - Jun 2019

## Work Experience

### OSU NLP Group, The Ohio State University

Research Assistant

Columbus, USA

Aug 2019 - Present

### Microsoft Research

Research Intern

Redmond, USA

May 2021 - Aug 2021

## Publications

(\* indicates equal contribution)

[23] *Is Your LLM Secretly a World Model of the Internet?* Model-Based Planning for Web Agents

**Yu Gu\***, Boyuan Zheng\*, Boyu Gou, Kai Zhang, Cheng Chang, Sanjari Srivastava, Yanan Xie, Peng Qi, Huan Sun, Yu Su

*in submission (2025). 2025*

[22] VisualAgentBench: Towards Large Multimodal Models as Visual Foundation Agents

Xiao Liu\*, Tianjie Zhang\*, **Yu Gu\***, lat Long long, Yifan Xu, Xixuan Song, Shudan Zhang, Hanyu Lai, Jiadai Sun, Xinyue Yang, Yu Yang, Zehan Qi, Shuntian Yao, Xueqiao Sun, Siyi Cheng, Qinkai Zheng, Hao Yu, Wenyi Hong, Ming Ding, Lihang Pan, Xiaotao Gu, Aohan Zeng, Zhengxiao Du, Chan Hee Song, Yu Su, Yuxiao Dong, Jie Tang

*ICLR (2025). 2025*

[21] HippoRAG: Neurobiologically Inspired Long-Term Memory for Large Language Models

**2,000+ Stars**

Bernal Jiménez Gutiérrez, Yiheng Shu, **Yu Gu**, Michihiro Yasunaga, Yu Su

*NeurIPS, 2024*

[20] Middleware for LLMs: Tools Are Instrumental for Language Agents in Complex Environments

**Yu Gu**, Yiheng Shu, Hao Yu, Xiao Liu, Yuxiao Dong, Jie Tang, Jayanth Srinivasa, Hugo Latapie, Yu Su

*EMNLP, 2024*

[19] Bringing Back the Context: Camera Trap Species Identification as Link Prediction on Multimodal Knowledge Graphs

Vardaan Pahuja, Weidi Luo, **Yu Gu**, Cheng-Hao Tu, Hong-You Chen, Tanya Berger-Wolf, Charles Stewart, Song Gao, Wei-Lun Chao Su

*CIKM, 2024*

[18] A Branching Decoder for Set Generation

Zixian Huang, Gengyang Xiao, **Yu Gu**, Gong Cheng

*ICLR, 2024*

[17] FlexKBQA: A Flexible LLM-Powered Framework for Few-Shot Knowledge Base Question Answering

Zhenyu Li, Sunqi Fan, **Yu Gu**, Xiuxing Li, Zhichao Duan, Bowen Dong, Ning Liu, Jianyong Wang

## [16] AgentBench: Evaluating LLMs as Agents

**2,000+ Stars**

Xiao Liu\*, Hao Yu\*, Hanchen Zhang, Yifan Xu, Xuanyu Lei, Hanyu Lai, **Yu Gu**, Hangliang Ding, Kaiwen Men, Kejuan Yang, Shudan Zhang, Xiang Deng, Aohan Zeng, Zhengxiao Du, Chenhui Zhang, Sheng Shen, Tianjun Zhang, Yu Su, Huan Sun, Minlie Huang, Yuxiao Dong, Jie Tang

ICLR, 2024

## [15] KoLA: Carefully Benchmarking World Knowledge of Large Language Models

Jifan Yu, Xiaozhi Wang, Shangqing Tu, Shulin Cao, Daniel Zhang-Li, Xin Lv, Hao Peng, Zijun Yao, Xiaohan Zhang, Hanming Li, Chunyang Li, Zheyuan Zhang, Yushi Bai, Yantao Liu, Amy Xin, Nianyi Lin, Kaifeng Yun, Linlu Gong, Jianhui Chen, Zhili Wu, Yunjia Qi, Weikai Li, Yong Guan, Kaisheng Zeng, Ji Qi, Hailong Jin, Jinxin Liu, **Yu Gu**, Yuan Yao, Ning Ding, Lei Hou, Zhiyuan Liu, Bin Xu, Jie Tang, Juanzi Li

ICLR, 2024

## [14] CompleQA: Benchmarking the Impacts of Knowledge Graph Completion Methods on Question Answering

Donghan Yu, **Yu Gu**, Chenyan Xiong, Yiming Yang

EMNLP (Findings), 2023

## [13] Mind2Web: Towards a Generalist Agent for the Web

Xiang Deng, **Yu Gu**, Boyuan Zheng, Shijie Chen, Samuel Stevens, Boshi Wang, Huan Sun, Yu Su

NeurIPS, 2023

## [12] Few-shot In-context Learning for Knowledge Base Question Answering

Tianle Li, Xueguang Ma, Alex Zhuang, **Yu Gu**, Yu Su, Wenhu Chen

ACL, 2023

[11] *Don't Generate, Discriminate*: A Proposal for Grounding Language Models to Real-World Environments**Outstanding Paper Award**

**Yu Gu**, Xiang Deng, Yu Su

ACL, 2023

## [10] TRAVERS: A Diversity-Based Dynamic Approach to Iterative Relevance Search over Knowledge Graphs

Ziyang Li, **Yu Gu**, Yulin Shen, Wei Hu, Gong Cheng

WWW, 2023

## [9] Knowledge Base Question Answering: A Semantic Parsing Perspective

**Yu Gu**, Vardaan Pahuja, Gong Cheng, Yu Su

AKBC, 2022

## [8] ArcaneQA: Dynamic Program Induction and Contextualized Encoding for Knowledge Base Question Answering

**Outstanding Paper Award**

**Yu Gu**, Yu Su

COLING, 2022

## [7] Clues Before Answers: Generation-Enhanced Multiple-Choice QA

Zixian Huang, Ao Wu, Jiaying Zhou, **Yu Gu**, Yue Zhao, Gong Cheng

NAACL, 2022

## [6] ACORDAR: A Test Collection for Ad Hoc Content-Based (RDF) Dataset Retrieval

Tengteng Lin, Qiaosheng Chen, Gong Cheng, Ahmet Soylu, Basil Ell, Ruqi Zhao, Qing Shi, Xiaxia Wang, **Yu Gu**, Evgeny Kharlamov

SIGIR, 2022

## [5] A Systematic Investigation of KB-Text Embedding Alignment at Scale

Vardaan Pahuja, **Yu Gu**, Yu Su

ACL, 2021

## [4] Beyond I.I.D.: Three Levels of Generalization for Question Answering on Knowledge Bases

**6,000+ Downloads**

**Yu Gu**, Sue Kase, Michelle Vanni, Brian Sadler, Percy Liang, Xifeng Yan, Yu Su

WWW, 2021

## [3] Relevance Search over Schema-Rich Knowledge Graphs

**Yu Gu**, Tianshuo Zhou, Gong Cheng, Ziyang Li, Jeff Z Pan, Yuzhong Qu

WSDM, 2019

## [2] Local ABox Consistency Prediction with Transparent TBoxes Using Gated Graph Neural Networks

**Yu Gu**, Jeff Pan, Gong Cheng, Heiko Paulheim, Giorgos Stoilos

NeSy@IJCAI, 2019

## Awards

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2024 **Outstanding Reviewer**, EMNLP

2023 **Outstanding Paper Award**, ACL

2022 **Outstanding Paper Award**, COLING

2021 **Student Travel Grant**, WWW

2017-2019 **Merit-based Scholarship (Graduate)**, Nanjing University

2013-2016 **Merit-based Scholarship (Undergraduate)**, Nanjing University

2015 **Meritorious Winner**, MCM

## Media Coverage

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2024.07 **Voice of China (ZhongGuoZhiSheng)**, China Media Group (CMG)

## Professional Service

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**PC member/Reviewer** ARR, ACL, EMNLP, NAACL, NeurIPS, ICLR, AAAI, JWS, NLPCC, TKDE, IJCLR, COLM, AKBC, etc.