

# ZIHAO XU

Homepage, Google Scholar, Github  
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## EDUCATION

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- **Rutgers University** **New Brunswick, NJ**  
Ph.D. in Computer Science and Technology  
Advised by Prof. [Hao Wang](#)  
Sep. 2021 – Now
- **Shanghai Jiao Tong University** **Shanghai, China**  
B.E. in Computer Science and Technology  
[ACM Honored Class, Zhiyuan College](#)  
Advised by Prof. [Hongtao Lu](#)  
Sep. 2016 – Jun. 2020

## RESEARCH INTEREST

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- My research interests span Large Language Models (LLMs), Domain Adaptation, Recommendation Systems, and Bayesian Deep Learning. My current focus is on token compression and exploring the cognitive capabilities of LLMs..

## PUBLICATION

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### [Domain-Indexing Variational Bayes: Interpretable Domain Index for Domain Adaptation](#)

Zihao Xu\*, Guang-Yuan Hao\*, Hao He, Hao Wang

International Conference on Learning Representations (ICLR), 2023 (**Spotlight**)

### [Implicit In-context Learning](#)

Zhuowei Li, **Zihao Xu**, Ligong Han, Yunhe Gao, Song Wen, Di Liu, Hao Wang, Dimitris N. Metaxas

International Conference on Learning Representations (ICLR), 2025

### [Continual Learning of Large Language Models: A Comprehensive Survey](#)

Haizhou Shi, **Zihao Xu**, Hengyi Wang, Weiyi Qin, Wenyan Wang, Yibin Wang, Hao Wang

ACM Computing Surveys, 2024

### [Taxonomy-Structured Domain Adaptation](#)

Tianyi Liu\*, **Zihao Xu**\*, Hao He, Guang-Yuan Hao, Guang-He Lee, Hao Wang

International Conference on Machine Learning (ICML), 2023

### [Probabilistic Residual User Clustering](#)

Wenyan Wang, Yusong Zhao, **Zihao Xu**, Hengyi Wang, Yi Wang, Chengzhi Mao, Shreya Venugopal, Desmond Lobo, Hengguan Huang, Hao Wang

IJCAI 2025 workshop Causal Learning for Recommendation Systems

### [Graph-Relational Domain Adaptation](#)

**Zihao Xu**, He Hao, Guang-He Lee, Yuyang Wang, Hao Wang

International Conference on Learning Representations (ICLR), 2022

### [GenVP: Generating Visual Puzzles with Contrastive Hierarchical VAEs](#)

Kalliopi Basioti, Pritish Sahu, Tony Qingze Liu, **Zihao Xu**, Hao Wang, Vladimir Pavlovic

International Conference on Learning Representations (ICLR), 2025

### [Knowledge Graph-Enhanced Retrieval Augmented Generation for E-Commerce](#)

**Zihao Xu**, Petar Ristoski, Qunzhi Zhou

RAGE-KG workshop for the 23rd International Semantic Web Conference

## Towards a Generalized Bayesian Model of Reconstructive Memory

Zihao Xu, Pernille Hemmer, and Qiong Zhang

Computational Brain & Behavior, 2024

“\*” indicates equal contribution.

## PROFESSIONAL SERVICE

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- Reviewer for Conference on Computer Vision and Pattern Recognition (CVPR) 2025
- Reviewer for AAAI Conference on Artificial Intelligence (AAAI) 2025
- Reviewer for International Conference on Machine Learning (ICML) 2024
- Reviewer for International Joint Conference on Artificial Intelligence (IJCAI) 2024
- Reviewer for International Conference on Learning Representations (ICLR) 2025, 2024
- Reviewer for Conference on Neural Information Processing Systems (NeurIPS) 2023
- Reviewer for International Conference on Computer Vision (ICCV) 2023
- Reviewer for ICLR 2022 Workshop PAIR2Struct 2022

## RESEARCH EXPERIENCE

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### Amazon Web Service (AWS)

San Jose, CA

Applied Research Intern

May. 2025 – Aug. 2025

- Long contexts pose significant challenges for Large Language Models (LLMs). We propose an (Almost) Lossless Token Sequence Compression method that reduces input token length by up to 75% without sacrificing performance. Supervised by John Harvill and Ziwei Fan.

### Magnit @ Meta

Remote

Academic Collaborator

Sep. 2024 – Mar. 2025

- Modern recommender systems often use deep learning (DL) models to encode user and item data. However, the complexity and opacity of these models can obscure their workings and limit enhancements. To overcome these issues, we introduce Probabilistic Residual User Clustering (PRUC), a causal Bayesian model that clusters users to improve recommendations. Supervised by Zhigang Hua and Qi Xu.

### eBay

San Jose, CA

Applied Research Intern

May. 2024 – Aug. 2024

- Large Language Models (LLMs) face challenges in e-commerce tasks due to inaccessible, frequently updated proprietary data. Fine-tuning with this data is costly and time-consuming. We propose a knowledge graph-enhanced retrieval augmented generation approach for e-commerce. Our KG, derived from eBay's inventory data, captures product relationships, enabling our framework to outperform baseline LLMs on three e-Commerce tasks in zero-shot and instruction-tuned settings. Supervised by Petar Ristoski and Qunzhi Zhou.

### Amazon AI Lab

Shanghai, China

Research Intern

Aug. 2020 – Aug. 2021

Traditional Domain Adaptation (DA) methods treat all domains equally, ignoring their inherent heterogeneity that can be modeled using graphs. In this project, we proposed a graph-based domain adaptation method, resulting in the publication "Graph-relational Domain Adaptation" at ICLR 2022. Our approach extends adversarial learning by introducing a novel discriminator that models encoding-conditioned graph embeddings, theoretically yielding graph-invariant features. Experiments on AWS SageMaker validated our method on both synthetic and real datasets. Supervised by Prof. Hao Wang and Bernie Wang.

- An Imitation-Learning-based method is adopted for the training of 3D object localizer, to see if action feedback can serve as a supervised signal. In a virtual environment, we trained the robot agent to navigate to certain objects (like chair) in the fewest steps. We made this pipeline differentiable, thus incorporating an imitation learning framework where agents are trained by expert trajectory. Directed by Prof. [Zihan Zhou](#).

## CODING LANGUAGE

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- Python: Proficient
- C++: Familiar
- Java: Familiar
- Matlab: Familiar

## SELECTED AWARDS AND HONORS

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| • University candidate of Apple Scholarship     | 2023       |
| • ICLR Travel Award                             | 2023       |
| • SMC Scholarship                               | 2018       |
| • Eleme (饿了么) Scholarship                       | 2017       |
| • Zhiyuan Honors Scholarship                    | 2018, 2017 |
| • Academic Excellence Scholarship (Third-Class) | 2018, 2017 |