

# ZIXUAN KE

Website ◇ Github ( $\approx$ 500 stars, 80 forks) ◇ Google Scholar ( $\approx$ 650 citations, 15 h-index) ◇ zke4@uic.edu

## BIOGRAPHY

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I am a final-year Ph.D. student at the University of Illinois, Chicago. My research studies how to enhance the **foundation models**, particularly **large language models (LLMs)**, for an **ever-changing world**, and make their knowledge more **reusable** and **updatable**. This includes (but not limited to) (1) **Large Language Model (pre-training, post-training and frontiers, e.g., retrieval-augmented LLM)** - presented at ICLR23, EMNLP22a, EMNLP22b; (2) **Continual and Lifelong Learning (task, class, and domain-incremental)** - presented at ICML23, NeurIPS20,21,22; (3) **Natural Language Processing (classification, generation and extraction)** - presented at EMNLP23, NAACL21, EMNLP21; (4) **Argument Mining** - presented at ACL18,19; IJCAI18,19.

## EDUCATION

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**Ph.D., University of Illinois at Chicago** *Aug. 2019 - Present*

Ph.D. in Computer Science. GPA 4.0/4.0. Advisor: Bing Liu  
Large Language Model and Continual Learning

**M.Sc., The University of Texas at Dallas** *Aug. 2017 - Jun. 2019*

M.Sc. in Computer Science. Advisor: Vincent Ng  
Argument Mining

**B.Sc., South China Agricultural University** *Aug. 2013 - Jun. 2017*

B.Sc. in Computer Science

## INDUSTRY EXPERIENCE

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**Google Research, Research Intern** *Summer 2023, Mountain View, CA*

Retrieval-augmented LLM. Mentors: Weize Kong, Cheng Li, Mingyang Zhang and Qiaozhu Mei

**Meta AI, Research Intern** *Summer 2022, Menlo Park, CA*

Continual Conversational Summarization. Mentors: Haoran Li, Wenhan Xiong and Asli Celikyilmaz  
Preprint: Sub-network Discovery and Soft-masking for Continual Learning of Mixed Tasks

**Amazon Alexa AI, Applied Scientist Intern** *Summer 2021, Seattle, WA*

Multi-domain Imbalanced Learning. Mentors: Mohammad Kachuee and Sungjin Lee  
Preprint: Domain-Aware Contrastive Knowledge Transfer for Multi-domain Imbalanced Data

**Tencent AI Lab, Research Intern** *Summer 2020, Remote*

Document Grounded Dialogue Generation. Mentors: Chen Li and Xiaoyang Wang

**Alibaba Group, Research Intern** *Summer 2019, Hangzhou, China*

Semantic Matching for E-commerce Search Engine. Mentors: Hongbo Deng

**IBM, Research Intern** *Summer 2016, Shenzhen, China*

Dialogue Act Classification for E-Commerce Chatbot.

## AWARDS AND PROFESSIONAL ACTIVITIES

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**Exceptional Research Premise** (the highest honor for CoE PhD students at UIC), 2023

**Invited Talks:**

- Enhancing Large Language Models for a Dynamic World, Talk at Google Research, Nov 9, 2023.

- Continual Pre-training in Language Models , Talk at ContinualAI, Remote, April 27, 2023.
- Continual Learning in NLP. Tutorial at DEIM23, Remote, March 6, 2023
- Lifelong and Continual Learning. A Short PhD Course, Aalborg University, 2022.

**PC Memeber (2021-):** ICLR, NeurIPS, ICML, ACL, EMNLP, NAACL, IJCAI, ARR, COLING  
**Journal Reviewer:** TPAMI, TKDE, Neural Networks, Neurocomputing, Artificial Intelligence

## SELECTED PUBLICATIONS (FULL LIST IN GOOGLE SCHOLAR)

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### Continual Pre-training of Language Models

**Zixuan Ke**, Yijia Shao, Haowei Lin, Tatsuya Konishi, Gyuhak Kim, and Bing Liu  
*International Conference on Learning Representations (ICLR)*, 2023

### Adapting a Language Model While Preserving its General Knowledge

**Zixuan Ke**, Yijia Shao, Haowei Lin, Hu Xu, Lei Shu and Bing Liu  
*Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2022a

### Continual Training of Language Models for Few-Shot Learning

**Zixuan Ke**, Haowei Lin, Yijia Shao, Hu Xu, Lei Shu and Bing Liu  
*Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2022b

### Achieving Forgetting Prevention and Knowledge Transfer in Continual Learning

**Zixuan Ke**, Bing Liu, Nainzu Ma, Hu Xu and Lei Shu  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2021

### CLASSIC: Continual and Contrastive Learning of Aspect Sentiment Classification Tasks

**Zixuan Ke**, Bing Liu, Hu Xu and Lei Shu  
*Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2021

### Adapting BERT for Continual Learning of a Sequence of Aspect Sentiment Classification Tasks

**Zixuan Ke**, Hu Xu and Bing Liu  
*Conference of the North American Chapter of Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*, 2021

### Continual Learning of a Mixed Sequence of Similar and Dissimilar Tasks

**Zixuan Ke**, Bing Liu and Xingchang Huang  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2020

### Automated Essay Scoring: A Survey of The State of the Art

**Zixuan Ke** and Vincent Ng  
*International Joint Conference on Artificial Intelligence (IJCAI)*, 2019

### Give Me More Feedback II: Annotating Thesis Strength and Related Attributes in Student Essays

**Zixuan Ke**, Hrishikesh Inamdar, Hui Lin and Vincent Ng  
*Association for Computational Linguistic (ACL)*, 2019

### Learning to Give Feedback: Modeling Attributes Affecting Argument Persuasiveness in Student Essays

**Zixuan Ke**, Winston Carlile, Nishant Gurrapadi and Vincent Ng  
*International Joint Conference on Artificial Intelligence (IJCAI)*, 2018