ZIXUAN KE

Website ⋄ Github (≈1k stars) ⋄ Google Scholar (≈2.5k citations, 25 h-index) ⋄ zke4@uic.edu

BIOGRAPHY

I am a research scientist at the Salesforce AI Research. My research studies how to build a **lifelong foundation models**, for an **ever-changing world** characterized by **emerging** domains, events, topics or information. This includes (but not limited to) (1) **Reasoning and Agents** (TMLR25, Preprint26, SEA@NeurIPS25, NeurIPS25, ICLR26) (2) **Post-training** (EMNLP25, ACL24, ICLR23, EMNLP22a, EMNLP22b); (3) **Continual and Lifelong Learning** (ICML23, NeurIPS20,21,22, Preprint22; (4) **NLP** (EMNLP23, NAACL21, EMNLP21; (5) **Argument Mining** (ACL18,19; IJCAI18,19).

EDUCATION

Ph.D., University of Illinois at Chicago *Aug. 2019 - May 2024*
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

Salesforce AI Research, Research Scientist *May 2024 - present, Palo Alto, CA*
Agents, Reasoning and Post-training. Manager: Shafiq Joty

Google DeepMind, Research Intern *Summer 2023, Mountain View, CA*
Retrieval-augmented Generation. Mentors: Weize Kong, Cheng Li, Mingyang Zhang and Qiaozhu Mei
ACL24: Bridging the Preference Gap between Retrievers and LLMs

Meta AI, Research Intern *Summer 2022, Menlo Park, CA*
Continual Conversational Summarization. Mentors: Haoran Li, Wenhan Xiong and Asli Celikyilmaz
EMNLP23: Sub-network Discovery and Soft-masking for Continual Learning of Mixed Tasks

Amazon Science, 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, Sunnyvale, CA (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.

PROFESSIONAL ACTIVITIES

Invited Talks & Classes:

- Toward Effective and Efficient Multi-Agent Systems
  Live Talk at CAMEL, Jan 23, 2026
- Adaptation of Large Lanaguge Models
  Tutorial at NAACL (Solo Speaker), May 3, 2025
  Talk at Visa Research, Mar 4, 2025
- Adapting Large Language Models for the Dynamic World
  Talk at Snowflake, Feb 1, 2024
  Talk at Salesforce AI Reseasrch, Jan 11, 2024
  Talk at Google DeepMind, 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.

SELECTED PUBLICATIONS.

Full list on Google Scholar

[1] **MAS-Orchestra: Understanding and Improving Multi-Agent Reasoning Through Holistic Orchestration and Controlled Benchmarks**
Zixuan Ke, Yifei Ming, Austin Xu, ..., Semih Yavuz, Caiming Xiong, Shafiq Joty
Preprint, 2026

[2] **Demystifying Domain-adaptive Post-training for Financial LLMs**
Zixuan Ke, Yifei Ming, Xuan-Phi Nguyen, Caiming Xiong, Shafiq Joty
*Empirical Methods in Natural Language Processing (**EMNLP**)*, 2025. Oral

[3] **MAS-Zero: Designing Multi-Agent Systems with Zero Supervision**
Zixuan Ke, Austin Xu, Yifei Ming, Xuan-Phi Nguyen, Caiming Xiong, Shafiq Joty
SEA@NeurIPS, 2025. Oral

[4] **A Survey of Frontiers in LLM Reasoning: Inference Scaling, Learning to Reason, and Agentic Systems**
Zixuan Ke, Fangkai Jiao, Yifei Ming, Xuan-Phi Nguyen, Austin Xu, Do Xuan Long, Minzhi Li, Chengwei Qin, Peifeng Wang, Silvio Savarese, Caiming Xiong, Shafiq Joty
NeurIPS Tutorial, 2025; *Transaction on ML Research (**TMLR**)*, 2025. Survey Certification Award

[5] **Bridging the Preference Gap between Retrievers and LLMs**
Zixuan Ke, Weize Kong, Cheng Li, Mingyang Zhang, Qiaozhu Mei, Michael Bendersky
*Association for Computational Linguistic (**ACL**)*, 2024

[6] **Continual Pre-training of Language Models**
Zixuan Ke*, Yijia Shao*, Haowei Lin* and Bing Liu
*International Conference on Learning Representations (**ICLR**)*, 2023

[7] **Sub-network Discovery and Soft-masking for Continual Learning of Mixed Tasks**
Zixuan Ke, Bing Liu, Wenhan Xiong, Asli Celikyilmaz, and Haoran Li
*Findings of Empirical Methods in Natural Language Processing (**EMNLP-Findings**)*, 2023

[8] **Parameter-level Soft-masking for Continual Learning**
Tatsuya Konishi, Mori Kurokawa, Chihiro Ono, **Zixuan Ke**, Gyuhak Kim, and Bing Liu
*International Conference on Machine Learning (**ICML**)*, 2023

[9] **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

[10] **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

[11] **A Theoretical Study on Solving Continual Learning**
Gyuhak Kim, Changnan Xiao, Tatsuya Konishi, **Zixuan Ke**, Bing Liu
*Advances in Neural Information Processing Systems (**NeurIPS**)*, 2022

[12] **A Multi-Head Model for Continual Learning via Out-of-Distribution Replay**
Gyuhak Kim, **Zixuan Ke**, Bing Liu
*Conference on Lifelong Learning Agents (**CoLLAs**)*, 2022

[13] **Continual learning of natural language processing tasks: A survey**
Zixuan Ke and Bing Liu
Preprint, 2022

[14] **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

[15] **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

[16] **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

[17] **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

[18] **Continual Learning with Knowledge Transfer for Sentiment Classification**
Zixuan Ke, Bing Liu, Hao Wang and Lei Shu
*European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (**ECML-PKDD**)*, 2020

[19] **Automated Essay Scoring: A Survey of The State of the Art**
Zixuan Ke and Vincent Ng
*International Joint Conference on Artificial Intelligence (**IJCAI**)*, 2019

[20] **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

[21] **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

[22] **Give me more feedback: Annotating argument persuasiveness and related attributes in student essays**
Winston Carlile, Nishant Gurrapadi, **Zixuan Ke** and Vincent Ng
*Annual Meeting of the Association for Computational Linguistics (**ACL**)*, 2018