

ZIXUAN KE

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

BIOGRAPHY

I am a research scientist at the Salesforce AI Research. I build **autonomous agentic systems**, for an **ever-changing world** characterized by **emerging** domains, events, tools, experiences, or agents. My research advances this through: (1) **Reasoning and Agents (RL)** (Preprint26a,26b,26c, TMLR25, ICLR25, SEA@NeurIPS25, NeurIPS25, ICLR26) (2) **Post-training (RL, SFT, CPT)** (EMNLP25, ACL24,ICLR23, EMNLP22a, 22b) (3) **Continual Learning** (ICML23, NeurIPS20,21,22, Preprint22) (4) **NLP** (EMNLP23, NAACL21, EMNLP21) (5) **Argument Mining** (ACL18,19; IJCAI18,19).

INDUSTRY EXPERIENCE

Salesforce AI Research, Research Scientist *May 2024 - present, Palo Alto, CA*
Agents, Reasoning and Post-training (RL, SFT, CPT). Manager: Shafiq Joty
Preprint26, ICLR26, TMLR25, SEA@NeurIPS25, NeurIPS25, EMNLP25, ICLR25

- Defined and led research agendas to improve reasoning and coordination in agentic systems.
- Built end-to-end LLM post-training pipelines integrating RL, SFT, and continual pre-training (CPT).
- Developed RL-based training frameworks and inference-time scaling methods for multi-agent orchestration and multi-step reasoning.
- Designed benchmarks and evaluation frameworks to assess reasoning and coordination capabilities.
- Scaled RL, SFT, and CPT training across multi-node infrastructure for large-scale experimentation.

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.

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
LLM Post-training 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

SELECTED PUBLICATIONS

Full list on Google Scholar

Reasoning and Agentic Systems

Multi-agent orchestration, RL-based reasoning, Inference-time scaling, and evaluation

- [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]  **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**
- [3]  **A Survey of Frontiers in LLM Reasoning: Inference Scaling, Learning to Reason, and Agentic Systems**
Zixuan Ke, Fangkai Jiao, Yifei Ming, ..., Silvio Savarese, Caiming Xiong, Shafiq Joty
NeurIPS Tutorial, 2025; **TMLR**, 2025. **Survey Certification Award**
- [4]  **Beyond Accuracy: Dissecting Mathematical Reasoning for LLMs Under Reinforcement Learning**
Jiayu Wang, Yifei Ming, **Zixuan Ke**, Caiming Xiong, Shafiq Joty
Advances in Neural Information Processing Systems (NeurIPS), 2025
- [5]  **LiveResearchBench: A Live Benchmark for User-Centric Deep Research in the Wild**
Jiayu Wang, Yifei Ming, ..., **Zixuan Ke**, Caiming Xiong, Shafiq Joty
International Conference on Learning Representations (ICLR), 2026
- [6]  **FaithEval: Can Your Language Model Stay Faithful to Context, Even If “The Moon is Made of Marshmallows”**
Yifei Ming, ..., **Zixuan Ke**, ..., Caiming Xiong, Shafiq Joty
International Conference on Learning Representations (ICLR), 2025

LLM Post-training

Adapting LLMs to new domains/tasks while preserving original capabilities (RL, SFT, CPT; 1000+ citations)

- [7]  **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, Best Paper Nomination**
- [8]  **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
- [9]  **Continual Pre-training of Language Models**
Zixuan Ke*, Yijia Shao*, Haowei Lin* and Bing Liu
International Conference on Learning Representations (ICLR), 2023
- [10]  **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
- [11]  **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

Continual Learning

Knowledge transfer and forgetting prevention across tasks, classes, and domains

- [12] **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
- [13] **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
- [14] **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
- [15] **Continual learning of natural language processing tasks: A survey**
Zixuan Ke and Bing Liu
Preprint, 2022
- [16] **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
- [17] **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
- [18] **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

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.

Services:

- Area Chair: ICML, ACL Rolling Review
- PC Member: ICLR, NeurIPS, ICML, ACL Rolling Review, TPAMI, TKDE and more