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. 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,b,c,d, 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

Agents/Skills/Tools orchestration, RL-based reasoning, Inference-time scaling, evaluation and benchmark

[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] **SkillOrchestra: Learning to Route Agents via Skill Transfer**
Jiayu Wang, Yifei Ming, **Zixuan Ke**, Shafiq Joty
Preprint, 2026

[5] **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

[6] **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

[7] **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)

[8] **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

[9] **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

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

[11] **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

[12] **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

[13] **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

[14] **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

[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] **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

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

[18] **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

[19] **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