

KAISHUAI XU

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EDUCATION

The Hong Kong Polytechnic University (PolyU)

PhD Student in Computer Science, guided by Prof. Wenjie Li

Sept. 2021 –

Hong Kong, China

- Focusing on LLM reasoning, conversational AI;

Huazhong University of Science and Technology (HUST)

Master of Management Science and Engineering, guided by Prof. Yukun Bao

Sept. 2017 – June 2020

Wuhan, China

- Focusing on time series forecasting; Cumulative GPA: 88.49/100; Courses: Matrix theory, Deep Learning;

Huazhong University of Science and Technology (HUST)

Bachelor of Management in Management Science at Qiming College

Sept. 2013 – June 2017

Wuhan, China

- Cumulative GPA: 3.91/4 (3/19*); Courses: C++ programming, Linear algebra, Mathematical Analysis I&II;
- (Students at Qiming College are selected from 120+ people who have passed the examinations and interviews and are trained with academic orientation)

SELECTED PUBLICATIONS (LLM)

- 🧠 **RAR²: Retrieval-Augmented Medical Reasoning via Thought-Driven Retrieval.** Kaishuai Xu, Wenjun Hou, Yi Cheng, Wenjie Li. *In Findings of the Association for Computational Linguistics: EMNLP 2025.*
- 🧠 **Learning to Align Multi-Faceted Evaluation: A Unified and Robust Framework.** Kaishuai Xu, Tiezheng Yu, Wenjun Hou, Yi Cheng, Liangyou Li, Xin Jiang, Lifeng Shang, Qun Liu, Wenjie Li. *In Findings of the Association for Computational Linguistics: ACL 2025.*
- 🧠 **Subtle Errors in Reasoning: Preference Learning via Error-injected Self-editing.** Kaishuai Xu, Tiezheng Yu, Wenjun Hou, Yi Cheng, Chak Tou Leong, Liangyou Li, Xin Jiang, Lifeng Shang, Qun Liu, Wenjie Li. *In Proceedings of the Annual Meeting of the Association for Computational Linguistics: ACL 2025.*
- 🧠 **Large Language Models for Disease Diagnosis: A Scoping Review.** Shuang Zhou, Zidu Xu, Mian Zhang, Chunpu Xu, Yawen Guo, Zaifu Zhan, Sirui Ding, Jiashuo Wang, Kaishuai Xu, Yi Fang, Liqiao Xia, Jeremy Yeung, Daochen Zha, Mingquan Lin, Rui Zhang. *npj Artificial Intelligence volume 1, Article number: 9 (2025)*
- 🧠 **Reasoning Like a Doctor: Improving Medical Dialogue Systems via Diagnostic Reasoning Process Alignment.** Kaishuai Xu, Yi Cheng, Wenjun Hou, Qiaoyu Tan, Wenjie Li. *In Findings of the Association for Computational Linguistics: ACL 2024.*

SELECTED PUBLICATIONS (OTHERS)

- 🧠 **Medical Dialogue Generation via Intuitive-then-Analytical Differential Diagnosis.** Kaishuai Xu, Wenjun Hou, Yi Cheng, Jian Wang, Wenjie Li.
- 🧠 **Medical Dialogue Generation via Dual Flow Modeling.** Kaishuai Xu, Wenjun Hou, Yi Cheng, Jian Wang, Wenjie Li. *In Findings of the Association for Computational Linguistics: ACL 2023.*
- **POLYU at TREC 2020 Conversational Assistant Track: Query Reformulation with Heuristic Topic Phrases Discovery.** Kaishuai Xu, Wenjie Li, Yongqi Li. *TREC 2020.*

WORK EXPERIENCE

Research Intern

CREAO AI

July 2025 – Sept 2025

Shanghai, China

- Built an in-house *data schema generation* module to replace the previous Gemini-based pipeline. Fine-tuned **Qwen3-4B** on the curated corpus to distill schema-generation capability into a lightweight model (SFT), followed by reinforcement learning (GRPO) with a *verifiable* reward that checks syntax validity, constraint coverage, and cross-field consistency; this stabilized schema outputs under distribution shift.

- Achieved schema quality approaching **Gemini-Pro** and clearly surpassing **Gemini-Flash** on internal metrics (e.g., structural validity, instruction adherence, relation consistency), while substantially **increasing token throughput and reducing generation latency/cost**.
- Delivered a production-ready component with automatic validators and regression tests, enabling a reliable drop-in replacement for downstream services that consume JSON-Schema artifacts.

Research Intern

June 2024 – July 2025

Noah's Ark Lab, Huawei Hong Kong Research Center

Hong Kong, China

- Developed and evaluated LLM-based reasoning models, optimizing performance through systematic experimentation with architectures and datasets. Our proposed method **RISE** achieves substantial improvements in accuracy on **mathematical reasoning** benchmarks (GSM8K, MATH, Aqua, etc.) and **logical reasoning datasets (e.g., ZebraLogic)**, along with a notable increase in pass@1 performance on **code generation tasks (MBPP and HumanEval)**.
- Proposed a two-stage robust LLM evaluation framework **ARJudge** that incorporates multiple criteria and external tools to assess models' response quality. Judgment accuracy (Acc) and agreement (Agr) are used to measure evaluation performance.
- Collaborated with researchers to explore novel ML techniques (DPO, PPO, GRPO, etc.), contributing to advancements in AI-driven problem-solving.

Research Assistant

Nov 2020 – Sept 2021

PolyU NLP Group, HK PolyU

Hong Kong, China

- Developed a medical dialogue system in Chinese that can perform remote diagnosis and provide medication recommendations. It uses external expert knowledge (i.e., CMeKG) and doctor action prediction and enhances responses by retrieval-augmented generation (RAG).
- Developed a conversational search system by training dense retriever (DPR), which achieves search in an iterative conversational way.

Data Analyst Intern

July 2019 – Sept. 2019

AliExpress, Alibaba Group

Hangzhou, China

- Developed time-series forecasting models to predict Gross Merchandise Volume (GMV) for the next 7 days, improving prediction accuracy by 5%. SVM and Linear Regression are used to help with prediction. Several moving average indicators are employed as key factors.
- Applied NLP techniques (e.g., NER, text classification) for sentiment analysis and trend detection in social media data, improving product demand forecasting.

RESEARCH EXPERIENCE

Regional Load Forecasting for the State Grid of China (guided by Prof. Yukun Bao, HUST)

2018

- Developed probabilistic models for time-series forecasting of electricity consumption, optimizing prediction accuracy for seasonal demand;
- Applied machine learning techniques (ARIMA, LSTMs, and regression models) to forecast monthly electricity loads across multiple provinces;

The 2019 Online Projected-based Machine Learning Research Program Developing Fake News Detection Algorithms (guided by Mike Tamir, UC Berkeley)

2019

- Developed an end-to-end pipeline that accomplishes fake news detection;

TREC CAsT 2020 (guided by Prof. Wenjie Li, PolyU)

2020

- Developed a rule-based conversational search framework with fine-tuning through BERT;
- Developed a web demo of the search framework;

LEADERSHIP & AWARDS

- **Innovation Award (5/123, as a team leader)**. Global Optimization Challenge 2018, JD.com, Inc. 2018
- **Academic Scholarship (Master, First Prize)**. HUST. 2018, 2017
- **Academic Excellence Scholarship (Bachelor)**. HUST. 2016, 2015

SKILLS

Programming: Python, C++

Machine Learning & Data Science: NLP, Deep Learning, Time-Series Forecasting, Statistical Modeling

Libraries & Tools: NumPy, Pandas, PyTorch, AWS, LangChain, SQL, verl, TRL, wandb