

# 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)

- 🦋 **RAR<sup>2</sup>: 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 –

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

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**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