

RUILING XU

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EDUCATION

Zhejiang University (ZJU)

Computer Engineering, GPA: 4.09/4.30

Sep. 2022 - Jun. 2026 (expected)

Zhejiang, CN

Data structure, Machine learning, Analog signal processing, Electronics, Computer systems & programming

University of Illinois Urbana-Champaign (UIUC)

Sep. 2022 - June. 2026 (expected)

Exchange Student in Computer Engineering (Dean's List, 2024 Fall)

Champaign, IL, US

Artificial intelligence, Digital signal processing, Data mining, Database system, Operating system, LLM reasoning

RESEARCHES & PUBLICATIONS

Unlearning Incentivizes Learning under Privacy Risk

July. 2024 – Oct 2024

Paper accepted by WWW2025(oral). Contributed as 2nd author

ZJU, CN

- Developed two models under federated learning scenario analyzing the interaction among machine unlearning, decision-making of users with risk aversion tendencies and varying privacy sensitivities, as well as platform profitability.
- Conducted a survey using WPP to quantify privacy sensitivity, demonstrating incentives from machine unlearning.
- Designed an optimal contract maximizing the profitability of both users and platform by backward induction and convex optimization methods (FOA, CVX solver), which was further validated by extensive numerical simulation.

BiasAlert: A Plug-and-play Tool for Social Bias Detection in LLMs

April. 2024 – July 2024

Paper accepted by EMNLP2024(main). Contributed as 3rd author

ZJU, CN

- Designed a RAG-based plug-and-play tool, BiasAlert, to reliably detect social bias in LLM's open-text generations.
- Constructed a bias retrieval database with 3.9k data across 7 bias types, crafted an instruction-following dataset and implemented prompt engineering tricks to enhance internal reasoning abilities.
- Experiments demonstrated that BiasAlert achieves a 79.4% bias mitigation rate and an average of 1.4 sec to monitor a single bias, and outperforms SOTAs (e.g., Llama-Guard and LLMs-as-judge).

Cross-center Model Adaptive Tooth segmentation

Mar 2023 – July 2024

Paper accepted by Medical Image Analysis. Contributed as 4th author

ZJU, CN

- Proposed the CMAT framework, which enables cross-center model adaptation without requiring source data or additional annotated data. It comprises three key modules: a tooth-level prototype alignment module, a progressive pseudo-label transfer module, and a tooth prior regularization information maximization module.
- Constructed two cross-center tooth segmentation dataset, CrossTooth and AbnTooth, from five medical centers.
- Experiments confirmed CMAT's superior performance in three typical scenarios: source-free, multi-source-free, and test-time adaptation.

WORK EXPERIENCE

BLENDER Lab, University of Illinois Urbana-Champaign

Feb. 2025 – Present

Research Intern in LLM Reasoning (Advisor: Heng Ji)

Champaign, IL

- Built a dataset of challenging mechanism prediction problems for LLMs in organic chemistry.
- Developed a multi-stage method to improve LLMs' mechanistic reasoning by identifying reaction centers, retrieving prior knowledge, and selecting pathways via agent-based Tree of Thought (ToT) reasoning or fine-tuning.

Zhejiang University

Aug. 2023 – Dec. 2023

Teaching Assistant, Discrete Mathematics (Mentor: Meng Zhang)

Zhejiang, China

- Delivered lectures on advanced topics on mathematical induction; designed and graded homework and exams.

REWARDS AND SCHOLARSHIPS

- National Scholarship, 2023
- First-Class Scholarship, Zhejiang University, 2023
- First Prize, College Student Mathematics Competition, 2023
- Gold Medal, as Wiki Team Leader, iGEM, 2024
- Core Volunteer, Hangzhou Asian Games, 2023

SKILLS

- **Languages:** Python, C/C++, CSS, JavaScript, TypeScript, HTML, MongoDB, RISC-V, LC3, Shell, Make, SQL
- **Tools:** PyTorch, HuggingFace, Git, Linux, Docker, Proteus