

# RUILING XU

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## EDUCATION

<b>Zhejiang University (ZJU)</b>	Sep. 2022 - Jun. 2026 (expected)
Computer Engineering, GPA: 4.09/4.30	Zhejiang, CN
Data structure, Machine learning, Analog signal processing, Electronics, Computer systems & programming	
<b>University of Illinois Urbana-Champaign (UIUC)</b>	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

<b>Unlearning Incentivizes Learning under Privacy Risk</b>	July. 2024 –Oct 2024
Paper accepted by WWW2025(oral). Contributed as 2nd author	ZJU, CN
<ul style="list-style-type: none"><li>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.</li><li>Conducted a survey using WPP to quantify privacy sensitivity, demonstrating incentives from machine unlearning.</li><li>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.</li></ul>	
<b>BiasAlert: A Plug-and-play Tool for Social Bias Detection in LLMs</b>	April. 2024 –July 2024
Paper accepted by EMNLP2024(main). Contributed as 3rd author	ZJU, CN
<ul style="list-style-type: none"><li>Designed a RAG-based plug-and-play tool, BiasAlert, to reliably detect social bias in LLM's open-text generations.</li><li>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.</li><li>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).</li></ul>	
<b>Cross-center Model Adaptive Tooth segmentation</b>	Mar 2023 –July 2024
Paper accepted by Medical Image Analysis. Contributed as 4th author	ZJU, CN
<ul style="list-style-type: none"><li>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.</li><li>Constructed two cross-center tooth segmentation dataset, CrossTooth and AbnTooth, from five medical centers.</li><li>Experiments confirmed CMAT's superior performance in three typical scenarios: source-free, multi-source-free, and test-time adaptation.</li></ul>	

## WORK EXPERIENCE

<b>BLENDER Lab, University of Illinois Urbana-Champaign</b>	Feb. 2025 – Present
Research Intern in LLM Reasoning (Advisor: Heng Ji)	Champaign, IL
<ul style="list-style-type: none"><li>Built a dataset of challenging mechanism prediction problems for LLMs in organic chemistry.</li><li>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.</li></ul>	
<b>Zhejiang University</b>	Aug. 2023 – Dec. 2023
Teaching Assistant, Discrete Mathematics (Mentor: Meng Zhang)	Zhejiang, China
<ul style="list-style-type: none"><li>Delivered lectures on advanced topics on mathematical induction; designed and graded homework and exams.</li></ul>	

## 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