Zirui Cheng

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Education

Department of Computer Science and Technology, Tsinghua University *Beijing, China*
Major in Computer Science and Technology, Minor in Economics and Finance *Jul 2021 - Current*

- **GPA:** 3.87/4.00
- **Courses:** Software Engineering (A), Artifial Neural Networks (A), Java Programming and Training (A), Introduction to Artificial Intelligence (A-), Introduction to Database Management System (A), Object-Oriented Programming (A), Data Structures, Computer Organizations, Computer Networks.

School of Economics and Management, Tsinghua University *Beijing, China*
Major in Economics and Finance, Minor in Computer Science and Technology *Aug 2019 - Jun 2021*

- **Courses:** Econometrics (A), Intermediate Microeconomics (A-), Intermediate Macroeconomics (A-), Principles of Politics (A+), Introductory Psychology (A-), Corporate Finance (A-).

Interests

Human-AI Interaction, Security and Privacy, Software Engineering.

Publications

[1] Yuntao Wang*, **Zirui Cheng***, Xin Yi, Yan Kong, Xueyang Wang, Xuhai Xu, Yukang Yan, Chun Yu, Shwetak Patel, Yuanchun Shi. Modeling the Trade-off of Privacy Preservation and Activity Recognition on Low-Resolution Images.
CHI 2023 — *2023 CHI Conference on Human Factors in Computing Systems.*

Research Experience

TreeQuestion: Using Multi-layer Multi-choice Questions to Mitigate the Cheating Risks through Generative AI *La Jolla, California, USA*
Undergraduate Research Assistant, University of California, San Diego, Advisor: Haojian Jin *Mar 2023 - Current*

- Propose a system AI for university teachers and students to generate multi-layer multi-choice questions based on generative to mitigate the cheating risks of open-ended questions in the face of generative AI.
- Introduce the Ideation-Validation-Generation interaction pattern with generative AI to improve generation quality, which splits education tasks into a series of primitive stages.
- Conduct evaluation studies to investigate the feasibility of generative AI in educational tasks and investigate teachers' time in writing the questions and students' time in answering the questions.

TeacherLM: Teaching to Fish Rather Than Giving Fish, Language Modeling Likewise *Beijing, China*
Research Intern, SenseTime Technology, Advisor: Mingjie Zhan *Oct 2022 - Jan 2023*

- Propose a large language model — TeacherLM-7.1B with capabilities of explaining the fundamentals, chain of thoughts, and common mistakes for most natural language processing (NLP) samples.
- Validate the data enhancement capability of the prompts generated from TeacherLM-7.1B through instruction finetuning on various dataset.

Modeling the Trade-off of Privacy Preservation and Activity Recognition on Low-Resolution Images *Beijing, China*
Undergraduate Research Assistant, Tsinghua University, Advisor: Yuntao Wang *Jun 2022 - Sep 2022*

- Propose a framework with ajustable parameters for modeling the trade-off of visual privacy preserving activity recognition under different resolutions using images and videos collected from multimodal applications.
- Investigate the effect of the image resolution on both human and machine's performance on activity recognition task and visual privacy awareness through user studies and computer vision experiments.

Honors

2022 **Social Service Excellence Scholarship**, Tsinghua University *Beijing, China*
2021 **Academic Performance Excellence Scholarship**, Tsinghua University *Beijing, China*
2021 **First Prize (top 1%)**, Chinese Undergraduate Students' Physics Competition *Beijing, China*
2020 **Overall Excellence Scholarship (top 10%)**, Tsinghua University *Beijing, China*
2019 **Freshmen Scholarship**, Tsinghua University *Beijing, China*

Skills

Programming Python, C/C++, JavaScript, Java, R, SQL, Matlab.
Frameworks React, Django, Vue
Languages Chinese (native proficiency), English (professional proficiency, TOEFL: 102).