Qinwei **Ma**

Yao Class student

personal

Qinwei Ma
Chinese
2002
Tsinghua University
Expected to graduate in 2025
View My Personal Google Scholar Link

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Certificates & Grants

Gold medal in National High School Physics Olympiad

First Prize in Shanghai in National High School Informatics Olympiad

Second Prize in Shanghai in National High School Mathematics Olympiad

Languages

Chinese
English
German
Japanese

Interests

Musical Theater
played the role Aaron Burr in *Hamilton*

Bridge Card
won second place in National College Students' Bridge Open Tournament Mixed Division

Soccer
Core member of the soccer team in IIIS department.

Short Resumé & Curriculum

2023 Nov.- 2024 Jun.

MIT Cocosci Lab
Remote Researcher · Remote
Serving as remote visiting researcher by Prof. Gan Chuang and Prof. Joshua Tenenbaum, mainly in the direction of multimodal synthesis and embodied multi-agent problems.

2021–Now

Tsinghua University
Undergraduate Student · Beijing
Expected graduation in 2025 with a specialization in Artificial Intelligence. I previously interned in Prof. Zhao Hang's Lab. Now doing research under Prof. Yi Wu's advisory.

Research Interest

Currently, my research interest mainly lies in two directions:

- **Preference Learning**
  My goal is to train agents (of various types) that align more effectively with human preferences. I aspire to make this process proactive, involving active interaction with humans rather than passively learning from pre-existing data.
- **Collaborative and Multi-Agent Systems**
  I aim to research methods to enhance the logical and social reasoning capabilities of large language model (LLM) agents when interacting with other agents or humans. This work will contribute to building large-scale agent systems that integrate seamlessly into human society.

  Overall, I want to do researches that provide good theoretical insights and make agents adapt better to human needs.

Academic

Basic Info

Overall GPA:	3.75	**TOEFL:**	109
Major GPA:	3.87	**GRE:**	328

Awards and Honors

- **First Prize in Challenge Cup**
  A project-based competition where I led all AI-related tasks.
- **Three School-level Scholarships**
  Recognized for achievements in Scientific and Technological Innovation, Artistic and Cultural Performance and Social Work respectively.
- **Gold Medal in National High School Physics Olympiad**
  Awarded in my second year of high school, directly granting me admission to Yao Class.

Main Research Experience

- **Internship by Prof. Hang Zhao**
  During my second year, I interned for a year in Prof. Hang Zhao's lab, developing foundational skills in deep learning and multimodal learning. I tackled a challenging project that honed my problem-solving and critical thinking, despite the idea being published by Google DeepMind later. This experience deepened my resilience and appreciation for cutting-edge AI research.
- **Collaboration with Lei Li, University of Washington**
  Since my third year, I have collaborated with Lei Li, a postdoctoral researcher at the University of Washington, on topics in NLP and time series. His mentorship encouraged my creativity and self-motivation, enabling me to propose and develop ideas while achieving meaningful outcomes. This experience sharpened my research focus and boosted my confidence in academic contributions.
- **Remote Internship at Cocosci Lab, MIT, under Prof. Gan Chuang**
  Initially worked on multimodal learning, then joined a project on embodied multi-agent reasoning. Found the focus on 3D scene reconstruction misaligned with my interests, and the reasoning aspect too abstract to address core issues. Thus pursued a parallel project with Lei Li in NLP and time series instead, deepening my research focus.
- **Remote Internship with Prof. Zhaoran Wang, Northwestern University**
  Proposed a novel idea on multi-agent reasoning in games using LLMs and initiated a collaboration with Prof. Wang based on shared research interests. Successfully developed the project during the summer,

Publications * stands for equal contribution

- **Scaling Law for Time Series Forecasting**
  Jingzhe Shi*, **Qinwei Ma***, Huan Ma, Lei Li; *NeurIPS 2024 Poster*
  A theoretical analysis on the effect of lookback horizon in time series forecasting models and verifying the scaling law in the field. I mainly took charge of all theoretical parts.
- **CHOPS: CHat with custOmer Profile Systems for Customer Service with LLMs**
  Jingzhe Shi, Jialuo Li, **Qinwei Ma**, Zaiwen Yang, Huan Ma, Lei Li; *CoLM 2024 Poster*
  I mainly helped wrap up the APIs for the database and design the pipeline details.

Papers in Submission

- **Towards Autonomous Strategy Learning in Language-Based POMGs via Hindsight Revealing**
  Qinwei Ma, Jingzhe Shi, Yuanhong Wang, Shenao Zhang, Jiaxuan Jiang, Yutong Yin, Huaxiu Yao, Zhaoran Wang; *AAMAS 2025 in Submission*
  Applying verbal reinforcement learning with hindsight revealing to let agents learn autonomously via self simulation in language-based POMGs, also providing an opensource benchmark for both verbal and traditional reinforcement learning in Werewolf games.
- **RapVerse: Coherent Vocals and Whole-body Motions Generations from Text**
  Jiaben Chen, Xin Yan, Yihang Chen, Siyuan Cen, Zixin Wang, **Qinwei Ma**, Haoyu Zhen, Kaizhi Qian, Lie Lu, Chuang Gan; *CVPR 2025 in Submissin*
  The work focuses on generating coherent whole-body motions and vocals based on text. I took charge of the training process for the vocal tokenizer.

Other Finished Non-Course Projects

- **Generating multi-instrument MIDI-format music from text.**
  Project Leader. I tried to train a transformer-based text-to-midi symbolic music synthesis model. Given up finally due to a similar publication by Meta AI.
- **A Dynamic Model for Japanese News Analysis**
  Project member. I take charge of all AI-related work, including using AI models to recognize the sentiments of comments and predict the main attitude of comments from the news.
  The project won the first prize in the 'Challenge Cup' at Tsinghua University. More further research is currently being carried on under the funding of the 'Disruptive Innovation Talent Development Program' by Tsinghua University.

Ongoing Non-Course Projects

- **Virtual Community: Lifelong Embodied Agents in Real World Scenes**
  An *ongoing* project led by Prof. Gan Chuang, I participated in task designing, agent memory system designing, and scene generation. Currently not taking part in the project anymore.
- **Bridging Gaps in DPO: Mechanistic Analysis and Learning Strategies**
  First Author. Conducted an in-depth analysis of major drawbacks in DPO and implemented a loss method that demonstrated a significant impact on a toy model. Currently testing the method on practical datasets, with plans to complete the project by January 2025 and submit findings to ICML 2025.
- **Scaling Law with Context Length in Language Models**
  Co-first Author. A theoretical analysis of the effect of context length in language models, and verification with experiments. I take charge of the theoretical parts basically. Planning for submission to ICML 2025 or ACL 2025.
- **RLAIF with Multiple LLMs as annotators**
  Co-first Author. Use an ensemble of weak LLMs as annotators to outperform a single strong annotator. Planning for submission to ACL 2025.
- **Discussion of Emergent Abilities in LLM with Statistical Physics**
  Project Leader. Collaborating with students in Physics department, Peking University. We plan to discuss the validity of the concept 'emergent ability' by referring it to the concept of 'phase transition' and apply tools in statistical physics on it.

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