# Junlin Yang

YangJL2003 | yangjl2003.github.io | yangjl22@mails.tsinghua.edu.cn | +86 19925350258

## Education and Academic

B.Eng in Computer Science and Technology, Tsinghua University 2022.9 - 2026.7(Expected)
**GPA:** 3.91 / 4.00.

## Research interest

I am particularly interested in **Machine Learning** and **Human-Computer Interaction**, with a focus on NLP (especially Language Grounding), Multimodal Learning, Neuro-Symbolic ConceptsThinkings and Reinforcement Learning. My recent research focuses on building embodied agents, especially computer agents, that can excel in solving human tasks and collaborating effectively with people. I remain curious and open to exploring various research questions in these fields.

## Research Experience

**AgentNet: Multimodal Computer Agent Data Scaling** 2024.7 - present
*Advised by Prof. Tao Yu, The University of Hong Kong*, Colead

- **Motivation**: Considering the current GUI Agent datasets lack long-horizon tasks, real-world usage scenarios, and coverage across various applications, we introduce AgentNet—a diverse, challenging, and real-world dataset of computer usage scenarios aggregated from well-defined application contexts.
- **Method**: We developed an efficient data collection system with efficient algorithms. After crowdsourcing and verification, we analyzed these data to gain valuable insights and perform extensive experiments to enhance the capabilities of our computer-use agents and investigate the characteristics of human-generated GUI data.
- **Results**: We acquired tens of thousands of long trajectories. Leveraging this data, we trained VLMs and explored the scaling properties of VLMs as computer use agents, as well as how to efficiently leverage human demonstration trajectories for agent learning.

**EchoMind: Enhancing Group Discussions through Human-AI Collaborative Issue Mapping** 2023.10 - 2024.9
*Advised by Prof. Chun Yu and Prof. Yuanchun Shi,Tsinghua University*

- **Motivation**: In group discussions, diverse perspectives are combined while a facilitator guides the conversation. However, the facilitator may struggle to keep track of the conversation and structure its content, leading to unproductive outcomes.
- **Method**: We build a collaborative system for visualizing discussion knowledge through real-time issue mapping, leveraging Large Language Models(LLMs).
- **Results**: User studies indicates that EchoMind helps clarify objectives and enhance productivity.

## Project Experience

**MartialArtsLM: Pretraining and Fine-tuning a Model Capable of Answering Questions about Martial Arts Novel** 2023.8 - 2023.9

- Pretrained the LM(Language Model) using preprocessed data from novels by Louis Cha.
- Fine-tuned the LM with different data volumes and iteration counts, synthesized an estimate of 400,000 pieces of Q&A data in 12 categories generated by LLM (Large Language Model).
- Built an interactive dialog system for Q&A with LM using Gradio.

## Selected Courses above 4.0:

**CS**: Introduction to Artificial Intelligence, Fundamentals of Computer Science, Foundation of Programming, Programming Training, Software Engineering, Computer Network, Formal Languages and Automata, Foundation of Object-Oriented Programming, etc.
**Math**: Probability Theory and Mathematical Statistic, Calculus A, Linear Algebra, Advanced topics in Linear

Algebra, Discrete Mathematics(2), Introduction to Complex Analysis, University Physic etc.

## Awards and Honors

- **Overall Excellence Scholarship** Tsinghua University, 2024
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- **Freshman Scholarship** Tsinghua University, 2022
- **Outstanding student cadre** Tsinghua University, 2023

## Languages

- Mandarin(Native), English(Fluent)
- TOEFL: 110 (R:29, L:29, S:25, W:27)

## Skills

- Curiosity and passion for research and strong teamwork sense and skills
- Experience in pretraining, fine-tuning LM and VLM, and agent framework designing
- Familiar with OpenRLHF, PyTorch, Sklearn
- Programming languages: $Python > C/C++ > SystemVerilog$

## Other Interests

- **Athletics**: Tennis, Badminton, jogging
- **Arts**: Music, film, reading