Yanming Wan

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Profile

- **Undergraduate interested in Artificial Intelligence and Human-AI Interaction.**
- Currently studying in **Yao Class** (led by Prof. Andrew Yao) with **1st ranked GPA** and scholarships.

Education

Tsinghua University **Beijing, China**

Undergraduate Student, Yao Class, Institute for Interdisciplinary Information Sciences (IIIS) *Aug. 2019 – present*

- **GPA: 3.97/4.00, Rank: 1/30** (Up till Summer Semester, 2022)
- Received **Comprehensive Excellence Scholarship** *Oct. 2022*
- Received **Recognition Prize of Yao Award** *Sept. 2022*
- Received **Jiang-Nanxiang Scholarship** (Unique in Yao Class) *Dec. 2021*
- Received **Comprehensive Excellence Scholarship** *Oct. 2020*
- Won the **Gold Medal** in 2018 Chinese Mathematical Olympiad, and admission guaranteed *Nov. 2018*

Research Experiences

CoCoSci Lab, Massachusetts Institute of Technology **Cambridge, the United States**

Undergraduate Visiting Student, Advised by Josh B. Tenenbaum *Dec. 2021 – present*

- To collaborate with human partners successfully in complex environments, robots should be able to interpret and follow natural language instructions in contexts.
- Introduced HandMeThat, a benchmark for a holistic evaluation of instruction understanding and following in physical and social environments, which highlights the additional challenge for understanding instructions with ambiguities based on physical states and human actions and goals.
- Evaluated several baseline models to show that both online and offline reinforcement learning algorithms perform poorly on the benchmark, suggesting significant room for future work on physical and social human-robot communications.
- Worked on proposing ideas, modeling, coding, conducting experiments, writing paper, and presenting slides; co-first author of **NeurIPS 2022** Datasets and Benchmarks Track accepted paper. (http://handmethat.csail.mit.edu)

Ma's Lab, Institute for Interdisciplinary Information Sciences (IIIS) **Beijing, China**

Undergraduate Researcher in Low-Level Vision, Advised by Kaisheng Ma *Dec. 2020 – Oct. 2021*

- Traditional data augmentation methods are proved to lose their effectiveness in low-level vision tasks (e.g. denoising) in our experiments, calling for a highly-versatile, theoretically-based data augmentation scheme.
- Developed a data augmentation method, which can guide the model to learn the required frequency domain component information during the training process, and demonstrated its effectiveness by experiments.
- Worked on proposing ideas and conducting experiments, collaborated with a PhD student.

Artificial Intelligence Course Project **Beijing, China**

Undergraduate Student, Advised by Chongjie Zhang *Oct. – Dec. 2020*

- Neural machine translation models may deliver significantly different results with only a nation's name altered in input, possibly leading to social issues.
- Revealed and quantified two nation-bias phenomena: 1) models may assign possessive case to more developed countries, 2) sentiment bias exists when translating specific words (difference choices for different countries).
- Designed experiments on both commercial and open-source NMT models (trained on United Nations dataset), and then provided explanations based on word frequency and phrase correlation.
- Worked on proposing ideas, designing experiments, analyzing data, writing paper, and making poster.

Publications

Yanming Wan*, Jiayuan Mao*, Joshua B. Tenenbaum. HandMeThat: Human-Robot Communication in Physical and Social Environments. In *NeurIPS Datasets and Benchmarks Track*, 2022.

Skills

Languages: Mandarin (Native), English (TOEFL 106/120)
Programming: Python (Pytorch), C/C++, Go, MATLAB, PDDL, Verilog HDL
Interests: Piano (10 years), Chorus (5 years), Music Composition