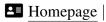
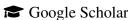
# Junyu Zhang

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#### **EDUCATION**

## **University of Illinois Urbana-Champaign (UIUC)**

Illinois, US

M.S. in Computer Science

Aug 2024 - May 2026

o **GPA: 4.0**/4.0

o Research Interest: Reinforcement Learning, LLMs, Embodied AI, Trustworthy Machine Learning

• **Research Advisor:** Prof. Huan Zhang

# **Huazhong University of Science and Technology (HUST)**

Hubei, China

B.E. in Artificial Intelligence, Honor Class of Artificial Intelligence

Sept 2020 - June 2024

o **GPA: 3.89/4; Rank: 1/29** (selected from 360 students in the school)

o English Proficiency: TOEFL 105 (Speaking 24); GRE 325+3.5 (Verbal 156, Quantitative 169, Writing 3.5)

#### PUBLICATIONS AND PREPRINTS

- Junyu Zhang\*, Runpei Dong\*, Han Wang, Xuying Ning, Haoran Geng, Peihao Li, Xialin He, Yutong Bai, Jitendra Malik, Saurabh Gupta, Huan Zhang, "AlphaOne: Reasoning Models Thinking Slow and Fast at Test Time", arXiv preprint [PDF] [Website]
- Rui Yang\*, Hanyang Chen\*, Junyu Zhang\*, Mark Zhao\*, Cheng Qian, Kangrui Wang, Qineng Wang, Teja Venkat Koripella, Marziyeh Movahedi, Manling Li, Heng Ji, Huan Zhang, Tong Zhang, "EmbodiedBench: Comprehensive Benchmarking Multi-modal Large Language Models for Vision-Driven Embodied Agents", in ICML 2025 Oral [PDF] [Website] [Dataset]
- Chengke Zou\*, Xingang Guo\*, Rui Yang\*, **Junyu Zhang**, Bin Hu, Huan Zhang, "DynaMath: A Dynamic Visual Benchmark for Evaluating Mathematical Reasoning Robustness of Vision Language Models", in ICLR 2025 [PDF] [Website] [Dataset]
- Heng Dong\*, Junyu Zhang\*, Chongjie Zhang, "Leveraging Hyperbolic Embeddings for Coarse-to-Fine Robot Design", in **ICLR 2024** [PDF] [Website]
- Heng Dong, Junyu Zhang, Tonghan Wang, Chongjie Zhang, "Symmetry-Aware Robot Design with Structured Subgroups", in ICML 2023 [PDF] [Website]
- Jianhao Wang\*, Jin Zhang\*, Haozhe Jiang, **Junyu Zhang**, Liwei Wang, Chongjie Zhang, "Offline Meta Reinforcement Learning with In-Distribution Online Adaptation", in ICML 2023 [PDF]

#### RESEARCH EXPERIENCE

### Research Assistant - Assured and Trustworthy AI Research Lab

Illinois, US

Supervisor: Prof. Huan Zhang

Aug 2024 - Present

#### Dynamic Benchmark for Mathematical Reasoning in Vision-Language Models

- Investigated the mathematical reasoning robustness and revealed limitations of SOTA VLMs.
- o Proposed a dynamic benchmark capable of generating a large number of question variants and conducted an extensive evaluation of both closed-source and open-source VLMs.

o Our work is accepted by ICLR 2025.

#### Vision-Driven Embodied Agent Benchmark of Multi-modal Large Language Models

- Developed a standardized, multifaceted evaluation platform for automatically quantifying the performance of task planning in MLLM-based embodied agents.
- Created capability-oriented task datasets from high-level rearrangement to low-level manipulation and performed extensive experimental evaluations to further understand MLLM-based planning.
- o Our work is accepted by ICML 2025.

#### **Test-Time Scaling of Large Reasoning Models**

- o Introduced a universal framework for modulating reasoning progress in LRMs at test time.
- Unified and generalized existing monotonic scaling methods by enabling flexible and dense slow-tofast reasoning modulation, demonstrating superior reasoning capability and efficiency.
- o Our work is submitted to EMNLP 2025.

#### **Visual Preference Optimization (in progress)**

- Proposed a learning framework that applies explicit, dense supervision to LVLMs by jointly optimizing both visual prior and language posterior representations.
- Distilled knowledge from contextualized to non-contextualized vision language models to enhance their alignment and performance.

# **Research Intern - MIT-IBM Watson AI Lab**

Massachusetts, US (remote)

Supervisor: Prof. Chuang Gan

April 2023 - Mar 2024

#### **Sequential Decision Making for Robotic Manipulation**

- Proposed a novel framework that enabled efficient policy generalization in the offline multi-task and imitation learning settings.
- Incorporated mixture of experts layers into the transformer model that effectively harnesses the commonalities and discriminations of multimodal data.
- o Evaluated our method on the RLBench benchmark that demonstrated great generalization ability.

### Research Intern - IIIS, Tsinghua University

Beijing, China

Supervisor: Prof. Chongjie Zhang

July 2022 - Jan 2024

#### **Offline Meta Reinforcement Learning**

- Revealed theoretical insights for offline meta-RL with online adaptation.
- Generated in-distribution context using a given uncertainty quantification and performed effective task belief inference to address new tasks.
- Our work is accepted by ICML 2023.

#### Robot Design via Reinforcement Learning

- Designed robots with various functionalities in simulated environments by using symmetry to exploit the structure of the robot design space with symmetry.
- Proposed a novel plug-and-play transformation module to map any robot design into a learned symmetry space and provided theoretical analysis to verify its rationality.
- o Our work is accepted by ICML 2023.

#### Multi-cellular Soft Robot Design

 Inspired from real multi-cellular organisms and developed a novel algorithm to co-design soft robots in behavior and morphology.

- Introduced coarse-to-fine robot design strategy and conducted a comprehensive analysis of its benefits in the evolution of intelligent collectives
- o Our project is accepted by ICLR 2024.

#### Research Assistant - School of AI, HUST

Hubei, China

Supervisor: Prof. Dongrui Wu

May 2021 - May 2022

#### **Epilepsy Seizure Detection and Automatic Classification Project**

- o Cooperated with Wuhan Children's Hospital Affiliated to Tongji Medical College.
- o Integrated transfer learning to deal with the lack of epileptic seizure data.
- Utilized manually extracted features to regularize and initialize neural network.

#### **World Robot Contest - BCI Brain Control Robot Contest**

- Completed Event-Related Potential experiments to figure out the position of target images in the sequence and determine their categories by analyzing the EEG signals.
- Introduced Euclidean-Space Alignment to deal with the differences of EEG signals between users and XDawn spatial filter to maximize the signal-to-noise ratio.
- o Our project won the Second Prize.

#### **Innovation Project Member - School of AI, HUST**

Hubei, China

Supervisor: Prof. Wenbing Tao

Mar 2022 - July 2022

#### **Innovation and Entrepreneurship Training Program**

- Aimed to build a complete football analysis system from football player detection, player identification to real-time position tracking and action recognition.
- Applied TinaFace based on RetinaNet to achieve face recognition due to the high degree of blurriness in facial images and the difficulty in capturing faces in videos.

#### HONORS AND AWARDS

- Outstanding Graduate Honor 2024
- Outstanding Undergraduate Student Award (top 1%) 2022
- Freshman Self-improvement Scholarship 2021
- Excellent Academic Scholarship 2021
- The Second Prize of the World Robot Contest-BCI Brain Control Robot Contest 2021
- The First Prize for Individual Events in the School Spring Sports Meeting 2021
- Science and Technology Innovation Scholarship 2022
- Honorable Mention in Mathematical Contest in Modeling 2022
- Third Prize of the Seventeenth C Programming Language Contest 2022
- The Second Prize in the Badminton event at the Fourth Sports Teaching Class Student Sports Skills Competition - 2022
- Science and Technology Innovation Scholarship 2023

#### ACADEMIC SERVICE

#### • Conference Reviewer

- International Conference on Learning Representations (ICLR) 2025
- o Conference on Neural Information Processing Systems (NeurIPS) 2025
- o ACL Rolling Review (ACL ARR) 2025

#### TEACHING EXPERIENCE

#### • Teaching Assistant

- ECE598-Advanced Topics in Machine Learning and Formal Methods, University of Illinois Urbana-Champaign, Fall 2024.
- o CS441-Applied Machine Learning, University of Illinois Urbana-Champaign, Spring 2025.

#### SKILLS SUMMARY

- Programming Languages Python, C/C++, Matlab, SQL, Bash
- Languages Chinese, English
- Frameworks PyTorch, TensorFlow, Keras, OpenCV, Scikit, etc.
- Tools PyCharm, VS Code, Markdown, Jupyter Notebook, Mobaxterm, Kubernetes, Git