# Maggie Ziyu Huan

Personal Website

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## EDUCATION

**University of Pennsylvania**  Philadelphia, Pennsylvania, USA
*Master of Science in Electrical Engineering*  *Sept 2024 - Aug 2025 (Expected)*

**Beijing University of Posts and Telecommunications**  Beijing, China
*Bachelor of Engineering in Electrical and Information Engineering*  *Sept 2020 - Jun 2024*

## ACADEMIC EXPERIENCE

**Berkeley NLP Group, BAIR, University of California Berkeley**  Berkeley, CA, USA
*Research Intern, Advisor: Alane Suhr*  *Apr 2024 - Now*

- **User Modeling for Collaborative Language Agents through Interactions**
  ▷ Established LLM and heuristic agents for **Card Corpus**, which is a corpus that two players need to model the other player's latent beliefs, desires, and intentions through conversation to accomplish a card game together.
  ▷ Explored belief and intention modeling during fine-tuning time through studying human-human dialogue and inferring beliefs and intentions at inference time.
  ▷ Constructing a framework that uses self-play to improve LLMs without given external reward.(On-going)

- **Measuring and Distinguishing Planning Depth for Optimal Decision-making (On-going)**
  ▷ Comparing and analyzing the differences between LLMs, heuristic search and human planning. Drawing inspiration from human planning patterns, we measured both LLM and human planning capability through planning depth.
  ▷ Studing how deeper planning can affect decision quality, and how we can utilize planning depth for optimal decision-making.

**Penn NLP Group, Department of CIS, University of Pennsylvania**  Philadelphia, PA, USA
*Course Project, Advisor: Chris Callison-Burch*  *Sep 2024 - Now*

- **Mixture-of-Experts Detectors for AI-Generated Text (On-going)**
  ▷ Improving generalization on different domains of AI-Generated Text Detectors using Mixture-of-Experts.

**TEA Lab, Institute for Interdisciplinary Information Sciences, Tsinghua University**  Beijing, China
*Research Intern, Advisor: Huazhe Xu*  *Nov 2023 - Feb 2024*

- **Online Exploration in MBRL with LLMs for embodied game agents**
  ▷ Introduced LLM as a hint of World Model's dreaming process with intrinsic rewards. Tested our methods on Crafter, Homegrid, and Minecraft.

**Huang's Group, Department of CS, University of Maryland College Park**  College Park, MD, USA
*Research Intern, Advisor: Furong Huang*  *May 2023 - Nov 2024*

- **Multi-modal MBRL for Robotics Low-level Locomotion Control**
  ▷ Tried to pre-train a multi-modal world model on low-level locomotion control.

- **Reasoning with VLMs on Robotics Locomotion Control**
  ▷ Established zero-shot VLMs on state-level locomotion control using stimulation environments like DMControl and Meta-World.

## INDUSTRY EXPERIENCE

**Deep RL Group, Machine Learning Group, Microsoft Research**  Beijing, China
*Research Intern, Advisor: Li Zhao*  *Jan 2023 - Oct 2023*

- **A RL-driven Reasoning Method for Decision-Making in LLMs**
  ▷ Iterative refinement on LLM's reasoning ability using Monte-Carlo Tree Search

## Preprints, Publication and Patents

- *World Models with Hints of Large Language Models for Goal Achieving*
Zeyuan Liu\*, **Ziyu Huan\***, Xiyao Wang, Jiafei Lyu, Jian Tao, Xiu Li†, Furong Huang†, Huazhe Xu†
In submission (ACL ARR August OA: 3.5, 3.5, 3.5, 3; Meta Review: 4)

- *CoT-MCTS: Reasoning on Large Language Models with Monte-Carlo Tree Search*
**Ziyu Huan**, Hongliang Liang
*Undergraduate Thesis*

- *Research on the Skills of Laser Holographic Experiment*
**Ziyu Huan**
*Numerical Communication World, Volume 2018.12*

- *Automatic Detection Designed for Round Workpieces*
**Ziyu Huan**
*Patent Number: CN201810805361*

## Leadership and Entrepreneurship

**Beyz AI - AI Interview Assistant** link                    Waterloo, Ontario, Canada (Remote)
*Chief Scientist*                                                          *Sep 2023 - Present*

- We launch a AI powered personalized interview assistant for applicants around the world.

- Act as chief scientist and product manager, provide ideas for company development and in charge of model training.

- Reached earning profit up to 50k USD, and raised 300k USD funding in incubation round in the first three month of product launch.

**Yoledge - An Academic Communication Forum** link                    Beijing, China
*Co-founder*                                                          *Aug 2021 - May 2022*

- Constructed an online forum helping starters get hands-on research advice.

- Acting as the founder and strategy leader of the project.

- This startup stopped running after Sept. 2022 due to all founders' school work.

**Stray Birds Club & River Protection Club**                    Beijing, China
*Co-founder and Organizer*                                                          *Sept 2017 - Jul 2019*

- Founded and operated the Stray Birds Club and River Protection Club. Stray Birds Club is awarded for **The Most Influential Club** in the High School Affiliated to Renmin University of China and Top 100 High School Clubs in China both in 2018.

- Organizing birding classes and tours to the reservoirs around Beijing City. Cooperated with local administrative agencies and NGOs (Friends of Nature, Let Birds Fly) and organized groups over 500 students on saving and freeing birds suffered from difficulties caused by urbanization.

- Cooperated with large NGOs on river protection in Beijing (Shan Shui Conservative Center). Led groups of over 200 students in total for quality detection of South Sha River on a routine basis, then send the results back to labs for further research.