

# YI GU

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## 🎓 EDUCATION

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### University of California, San Diego

Sept. 2022 – Present

*Ph.D.* student in Data Science, Halıcıoğlu Data Science Institute, anticipated Spring 2027

Advisor: Prof. Zhiting Hu

### Shanghai Jiao Tong University

Sept. 2018 – June 2022

*Bachelor of Engineering* in Computer Science and Technology

- Member of ACM Class, an elite CS program for top 5% talented students
- GPA: All 3.94 / 4.3, ranked 4 / 32; Core 3.96 / 4.3, ranked 2 / 32

## 🔍 RESEARCH INTERESTS

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My research interest is in the intersection of machine learning, natural language processing and robotics, especially in designing embodied AI with grounded perception.

I am currently working on topics between language models and interactions.

## 📄 PUBLICATIONS

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- **Yi Gu\***, Shunyu Yao\*, Chuang Gan, Joshua B. Tenenbaum, Mo Yu, *Revisiting the Roles of “Text” in Text Games* (EMNLP 2022 Findings) (paper)
  - Chuang Gan\*, **Yi Gu\***, Siyuan Zhou, Jeremy Schwartz, Seth Alter, James Traer, Dan Gutfreund, Joshua Tenenbaum, Josh McDermott and Antonio Torralba, *Finding Fallen Objects Via Asynchronous Audio-Visual Integration* (CVPR 2022) (website) (paper)
- (\* indicates authors with equal contribution)

## 👤 RESEARCH EXPERIENCE

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### UCSD Mix Lab

Sept. 2022 – Present

Advised by Prof. Zhiting Hu

#### Language Model and Exploration in World Model

- Let language model acquire knowledge by interacting and exploration in world models
- Evaluate with tasks designed towards various types of knowledge

#### Reasoning with Language Model is Planning with World Model

- Propose to treat a Language Model as the World Model, and use an agent to plan a consistent reasoning trace based on the predicted next state and reward provided by the World Model
- Ground the proposed approach in plan generation, math reasoning, and multi-hop QA tasks

#### Distillation with Language Model as World Model

- Treat teacher language model as world model to enable advanced RL techniques in LM distillation
- Formulate the corpus collection process for distillation to utilize language model as world model

### MIT Computational Cognitive Science Group

Jan. 2021 – Jan. 2022

Advised by Dr. Chuang Gan and Prof. Josh Tenenbaum

#### Revisiting the Role of “Text” in Text Games

- Reconcile that semantic and non-semantic language representations could be supplementary
- Propose a simple scheme to extract contextual information as extra input for RNN-based agents, achieving competitive performance with SOTA text agents with advanced NLU agents
- Provide new insights for designing better text game task setup and agents
- **Accepted by EMNLP 2022 Findings**

## **Finding Fallen Objects Via Asynchronous Audio-Visual Integration**

- Introduce a setting to study multi-modal object localization in 3D virtual environments
- Generate a large-scale dataset including 8000 instances of 30 physical object categories in 64 rooms
- Perform an in-depth analysis of the challenge through the modular planning-based agent
- **Accepted by CVPR 2022**

## **OTHER EXPERIENCE**

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### **International Collegiate Programming Contest (ICPC)**

June 2018 – Dec 2019

*Member of SJTU ICPC Team “Platelet”* Coach: Prof. Yong Yu

*Leader of SJTU ICPC Team “Aerial Ace”* Coach: Prof. Yong Yu

- Participate in China Collegiate Programming Contest (CCPC) and International Collegiate Programming Contest (ICPC)
- Prepare team reference material for contests
- Winning the championship in ICPC 2018 Singapore Site (see “Honors and Awards” section for full list)

### **ICPC Coach**

June 2020 – Oct. 2021

*Co-coach of SJTU ICPC Team* Coach: Prof. Yong Yu

### **TA: Compiler Design and Implementation**

Mar. 2021 – May. 2021

*Teaching Assistant* Lecturer: Prof. Yong Yu

## **HONORS AND AWARDS**

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<i>Champion, ICPC 2018 Singapore Site</i>	Dec. 2018
<i>Gold Medal, CCPC 2018 Guilin Site, ranked 15th</i>	Oct. 2018
<i>Silver Medal, ICPC 2018 Beijing Site</i>	Nov. 2018
<i>Gold Medal, CCPC 2019 Xiamen Site, ranked 8th</i>	Oct. 2019
<i>Gold Medal, ICPC 2019 Xuzhou Site, ranked 4th</i>	Nov. 2019
<i>National Scholarship of P.R. China (Top 0.2% nationwide), Ministry of Education of P.R. China</i>	2021
<i>Zhiyuan Outstanding Student Scholarship, SJTU</i>	2022
<i>Rong Chang Scholarship in Technological Innovation (2 times) (20 winners each year), SJTU</i>	2019, 2020
<i>Zhiyuan Honorary Scholarship (3 times)</i>	2019, 2020, 2021

## **SKILLS**

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Programming Languages: Python = Kotlin = Java > C/C++ = HTML = Javascript

Deep Learning Packages: PyTorch, TensorFlow

Frontend: Android

Languages: English - Fluent, Chinese - Native speaker