

Feiyu “Gavin” Zhu

+1 412-608-4566 | feiyuz@andrew.cmu.edu | zfy0314.github.io | Pittsburgh, PA, USA

EDUCATION

Carnegie Mellon University Robotics Institute

Ph.D. in Robotics (QPA 4.0/4.0)

Focus: Neuro-Symbolic AI, Human-AI Collaboration, Cognitive Robotics

Advisors: Reid Simmons, Jean Oh

Aug. 2024 – May 2029

Pittsburgh, PA, USA

Carnegie Mellon University School of Computer Science

B.S. in Artificial Intelligence with additional major in Cognitive Science (QPA 4.0/4.0)

Thesis: Incorporating Instructive Feedback in Human-AI Interaction

Advisor: Reid Simmons

Aug. 2020 – May 2024

Pittsburgh, PA, USA

RESEARCH EXPERIENCE DURING PHD

Bridging Instruction Following and Practice in Robot Learning

Sept. 2024 – Present

- Utilized LLMs to instantiate policy structure from domain knowledge for sample-efficient behavior cloning

RESEARCH EXPERIENCE BEFORE PHD

Research Assistant (Advisor: Prof. Reid Simmons)

Reliable Autonomous Systems Lab, Carnegie Mellon University

Feb. 2021 – May 2024

Pittsburgh, PA, USA

- Developed a cognitive architecture for embodied agents for household tasks
- Developed a bootstrapping framework to use LLMs to initiate cognitive agents
- Developed decision-tree-based agents that execute human-like strategies
- Conducted and analyzed online user study for partnering with human players in Hanabi
- Present to Amazon collaborators monthly

Research Assistant (Advisor: Prof. Alexander Mathis)

Center for Neuroprosthetics, École Polytechnique Fédérale de Lausanne (EPFL)

May 2022 – Jan. 2023

Geneva, Switzerland

- Built random forest model for healthy subjects' movement trajectory classification
- Developed weakly supervised local feature descriptor for localization and evaluation of stroke-related movements
- Experimented with rendering tools based on SMPL models for better annotations
- Built Fugl-Meyer Assessment estimator for stroke patients performing activities of daily living
- Explored intrinsic properties of stroke/healthy movement trajectories with functional PCA

Research Assistant (Advisors: Prof. Yonatan Bisk, Dr. Chris Paxton [NVIDIA])

Connecting Language to Actions & the World Lab, Carnegie Mellon University

Feb. 2021 – Dec. 2021

Pittsburgh, PA, USA

- Worked on multimodal action anticipation in the kitchen environment with transformer models
- Designed crowd-sourcing interface for kitchen video data annotation on AWS Mechanical Turk
- Implemented video summarization algorithm for video processing

PUBLICATIONS

Sample-Efficient Behavior Cloning Using General Domain Knowledge
in *International Joint Conference on Artificial Intelligence (IJCAI) 2025*

Feiyu Zhu, Jean Oh, Reid Simmons

(acceptance rate 19.3%)

Bootstrapping Cognitive Agents with a Large Language Model
in *The AAAI Conference on Artificial Intelligence 2024 (Oral)*

Feiyu Zhu, Reid Simmons

(acceptance rate 23.75%)

SQE: Self Quality Evaluation Metric for Parameters Optimization in Multi-Object Tracking
in *CVF/IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2020*

Yanru Huang, Feiyu Zhu, Zheni Zeng, Xi Qiu, Yuan Shen, Jianan Wu

(acceptance rate 25.01%)

HONORS AND AWARDS

Member, <i>The Phi Beta Kappa Society</i>	Apr. 2024
Summer Undergraduate Research Fellowship, <i>Carnegie Mellon University</i> (\$4500)	Jun. 2023
Member, <i>Mortar Board</i>	Apr. 2023
Member, <i>Psi Chi, The International Honor Society in Psychology</i>	Jan. 2023
Summer@EPFL Research Fellowship, <i>École Polytechnique Fédérale de Lausanne (EPFL)</i> (5400CHF)	Aug. 2022
ThinkSwiss Research Scholarship, <i>Embassy of Switzerland in Washington, D.C.</i>	Feb. 2022
Dean's List, High Honors, <i>School of Computer Science, Carnegie Mellon University</i>	All semesters
Finalist, <i>2019 Intel International Science and Engineering Fair (ISEF)</i>	May 2019

TEACHING EXPERIENCE

Teaching Assistant (<i>Primary Instructor: Prof. Stephanie Rosenthal</i>) <i>CMU 15-281 Artificial Intelligence: Representation and Problem Solving</i> <ul style="list-style-type: none">Head TA (led a team of 9 TAs) for Fall 2023	Aug 2022 – Dec. 2024 <i>Pittsburgh, PA, USA</i>
Teaching Assistant (<i>Primary Instructor: Prof. Reid Simmons</i>) <i>CMU 07-180 Concepts in Artificial Intelligence</i> <ul style="list-style-type: none">Head TA (led a team of 10 TAs) for Spring 2023, Spring 2024	Jan. 2022 – Mar. 2024 <i>Pittsburgh, PA, USA</i>

MENTORING

Justin Ma, <i>CMU Undergrad</i> →	May 2025 - Present
Shridula Srinivasan, <i>CMU Undergrad</i> →	May 2025 - Present

INVITED TALKS

DDMLab at CMU, <i>Bootstrapping Cognitive Agents with a Large Language Model</i>	Mar. 2025
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SERVICE

Reviewer: International Journal of Social Robotics (2024)
Outreach: Pathway to AI Research (PAIR) at CMU

SKILLS

Programming Languages: Python, C, SML
Programming Libraries: Pytorch, spaCy, scikit-learn, NumPy, OpenCV, lightgbm, ACT-R
Other Tools: L ^A T _E X, Unix, Vim, Git, Docker
Languages: Chinese (Native), English (Native)

REFERENCES

Prof. Reid Simmons, <i>Carnegie Mellon University</i>	Research advisor; undergraduate academic advisor
Prof. Jean Oh, <i>Carnegie Mellon University</i>	Research advisor
Prof. Alexander Mathis, <i>École Polytechnique Fédérale de Lausanne (EPFL)</i>	Research advisor
Prof. Yonatan Bisk, <i>Carnegie Mellon University</i>	Research advisor
Prof. Stephanie Rosenthal, <i>Carnegie Mellon University</i>	Course instructor for teaching assistant