Feiyu "Gavin" Zhu

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EDUCATION

Carnegie Mellon University Robotics Institute   Aug. 2024 – May 2029
Ph.D. in Robotics   (QPA 4.0/4.0)   *Pittsburgh, PA, USA*
Focus: Neuro-Symbolic AI, Human-AI Collaboration, Cognitive Robotics
Advisors: Reid Simmons, Jean Oh

Carnegie Mellon University School of Computer Science   Aug. 2020 – May 2024
B.S. in Artificial Intelligence with additional major in Cognitive Science   (QPA 4.0/4.0)   *Pittsburgh, PA, USA*
Thesis: Incorporating Instructive Feedback in Human-AI Interaction
Advisor: Reid Simmons

RESEARCH EXPERIENCE DURING PHD

Efficient Robot Learning From Interactions   Sept. 2024 – Present
- Leverage LLMs to instantiate policy structure from domain knowledge for sample-efficient behavior cloning

RESEARCH EXPERIENCE BEFORE PHD

Research Assistant *(Advisor: Prof. Reid Simmons)*   Feb. 2021 – May 2024
Reliable Autonomous Systems Lab, Carnegie Mellon University   *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)*   May 2022 – Jan. 2023
Center for Neuroprosthetics, École Polytechnique Fédérale de Lausanne (EPFL)   *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])*   Feb. 2021 – Dec. 2021
Connecting Language to Actions & the World Lab, Carnegie Mellon University   *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

Intern *(Advisor: Dr. Guyue Zhou)*   Dec. 2020 – Feb. 2021
Institute for A.I. Industry Research (AIR), Tsinghua University   *Beijing, China*
- Designed customizable robot and educational games for 4-8th grade STEM education

Research Intern *(Advisors: Xi Qiu, Jianan Wu)*   Aug. 2019 – Sep. 2020
Megvii Inc. (Face ++)   *Beijing, China*
- Researched in automatic parameter optimization and self-supervised feature extraction in pedestrian tracking
- Developed and maintained pedestrian tracking module in video structuralization pipeline
- Designed drone-based electric grid visual inspection algorithm for China Southern Power Grid

Publications

Sample-Efficient Behavior Cloning Using General Domain Knowledge
in *Submission at IJCAI 2025*
Feiyu Zhu, Jean Oh, Reid Simmons

Bootstrapping Cognitive Agents with a Large Language Model   (acceptance rate 23.75%)
in *The AAAI Conference on Artificial Intelligence 2024* **(Oral Presentation)**
Feiyu Zhu, Reid Simmons

SQE: Self Quality Evaluation Metric for Parameters Optimization in Multi-Object Tracking   (acceptance rate 25.01%)
in *CVF/IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2020*
Yanru Huang, **Feiyu Zhu**, Zheni Zeng, Xi Qiu, Yuan Shen, Jianan Wu

Honors and Awards

Member, *The Phi Beta Kappa Society*	Apr. 2024
Summer Undergraduate Research Fellowship, *Carnegie Mellon University (\$4500)*	Jun. 2023
Member, *Mortar Board*	Apr. 2023
Member, *Psi Chi, The International Honor Society in Psychology*	Jan. 2023
Summer@EPFL Research Fellowship, *École Polytechnique Fédérale de Lausanne (EPFL) (5400CHF)*	Aug. 2022
ThinkSwiss Research Scholarship, *Embassy of Switzerland in Washington, D.C.*	Feb. 2022
Dean's List, High Honors, *School of Computer Science, Carnegie Mellon University*	All semesters
Outstanding Intern, *Megvii Inc.*	Dec. 2019, Jan. 2020, Feb. 2020
Finalist, *2019 Intel International Science and Engineering Fair (ISEF)*	May 2019

Teaching Experience

Teaching Assistant *(Primary Instructor: Prof. Stephanie Rosenthal)*   Aug 2022 – Dec. 2024
CMU 15-281 Artificial Intelligence: Representation and Problem Solving   *Pittsburgh, PA, USA*
- Head TA (lead a team of 9 TAs) for Fall 2023

Teaching Assistant *(Primary Instructor: Prof. Reid Simmons)*   Jan. 2022 – Mar. 2024
CMU 07-180 Concepts in Artificial Intelligence   *Pittsburgh, PA, USA*
- Head TA (lead a team of 10 TAs) for Spring 2023, Spring 2024

Service

Journal Reviewer: International Journal of Social Robotics
Mentorship: Pathway to AI Research @ CMU

Skills

Programming Languages: Python, C, SML
Programming Libraries: Pytorch, spaCy, scikit-learn, NumPy, OpenCV, lightgbm, ACT-R
Other Tools: LaTeX, Unix, Vim, Git, Docker, Markdown
Languages: Chinese (Native), English (Native)

References

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