Yohei Hayamizu

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Note: This CV was last updated on February 12, 2025.

RESEARCH INTEREST

Robotics, Reinforcement Learning, Planning, and Human-Robot Interaction

I focus on developing socially grounded autonomous robots that perform various tasks by seamlessly interacting and navigating human-inhabited complex environments. Here are my interests (with references to representative first-author publications):

- Dialog Navigation Systems that are socially influential [3]
- Knowledge-based Reinforcement Learning [7]
- Knowledge Representation and Acquisition [5]

EDUCATION

The State University of New York at Binghamton Aug. 2021 – Present
Ph.D. in Computer Science, GPA: 3.89/4.00, Advisor: Prof. Shiqi Zhang

University of Electro-Communications Apr. 2018 – Mar. 2021
M.S. in Computer Science, GPA: 3.73/4.00, Advisor: Prof. Keiki Takadama

Iwate University Apr. 2014 – Mar 2018
B.E. in Computer Science, GPA: 3.33/4.00, Advisor: Prof. Chon Hae Kim

PUBLICATIONS

See my Google Scholar for a full list of my publications.

1. Xiaohan Zhang, Zainab Altaweel*, **Yohei Hayamizu***, Yan Ding, Saeid Amiri, Hao Yang, Andy Kaminski, Chad Esselink, and Shiqi Zhang (*Equal Contribution), *DKPROMPT: Domain Knowledge Prompting Vision-Language Models for Open-World Planning*, CVPR EAI Workshop, 2024. (Paper)
2. David DeFazio, **Yohei Hayamizu**, and Shiqi Zhang, *Learning quadruped locomotion policies using logical rules*, Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS), 2024. (Paper, Site)
3. Issei Saito, Tomoaki Nakamura, Akira Taniguchi, Tadahiro Taniguchi, **Yohei Hayamizu**, and Shiqi Zhang, *Emergence of continuous signals as shared symbols through emergent communication*, IEEE International Conference on Development and Learning (ICDL), 2024. (Paper)
4. **Yohei Hayamizu**, Zhou Yu, and Shiqi Zhang, *Learning Joint Policies for Human-Robot Dialog and Co-Navigation*, IEEE/RSJ International Conference on Intelligent Robots (IROS), 2023. (Paper)
5. Hiroki Shiraishi, **Yohei Hayamizu**, and Tomonori Hashiyama, *Fuzzy-UCS Revisited: Self-Adaptation of Rule Representations in Michigan-Style Learning Fuzzy-Classifier Systems*, Proceedings of the Genetic and Evolutionary Computation Conference (GECCO), 2023. (Paper)
6. Hiroki Shiraishi*, **Yohei Hayamizu***, Hiroyuki Sato, and Keiki Takadama (*Equal Contribution), *Beta Distribution-based XCS Classifier System*, IEEE Congress on Evolutionary Computation (CEC), 2022. (Paper)
7. Hiroki Shiraishi, **Yohei Hayamizu**, Hiroyuki Sato, and Keiki Takadama, *Absumption based on overgenerality and condition-clustering based specialization*

for XCS with continuous-valued inputs, Proceedings of the Genetic and Evolutionary Computation Conference (GECCO), 2022. **Best Paper Award (EML Track).** (Paper)

8. **Yohei Hayamizu**, Saeid Amiri, Kishan Chandan, Keiki Takadama, and Shiqi Zhang, *Guiding Robot Exploration in Reinforcement Learning via Automated Planning*, Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS), 2021. (Paper, Video, Code)
9. Hiroki Shiraishi, Masakazu Tadokoro, **Yohei Hayamizu**, Yukiko Fukumoto, Hiroyuki Sato, and Keiki Takadama, *Misclassification Detection based on Conditional VAE for Rule Evolution in Learning Classifier System*, Proceedings of the Genetic and Evolutionary Computation Conference (GECCO), 2021. (Paper)

ACADEMIC SERVICES

Reviewer: RA-L (2022, 2023), AAAI (2024, 2025), WCCI (2024)

Teaching Assistant at SUNY Binghamton Aug. 2022 – Present

My duties involve assisting students in learning the course materials and grading their assignments.

- Intro. to Artificial Intelligence [CS465/565], Prof. Shiqi Zhang, Fall 2024
- Intro. to Artificial Intelligence [CS465/565], Prof. Shiqi Zhang, Summer 2024
- Programming Language [CS571], Prof. Zerksis D. Umrigar, Spring 2024
- Intro. to Artificial Intelligence [CS465/565], Prof. Shiqi Zhang, Fall 2023
- Intelligent Mobile Robotics [CS424/524], Prof. Shiqi Zhang, Spring 2023
- Intro. to Programming in Python [CS110], Prof. Steven Moore, Spring 2023
- Intro. to Artificial Intelligence [CS465/565], Prof. Shiqi Zhang, Fall 2022

RESEARCH EXPERIENCE

Research Assistant at SUNY Binghamton Aug 2021 – July. 2022

• Research on Visual-Dialogue Navigation system that robots communicate with humans while moving around for humans to make satisfying decisions. The experiments are conducted in abstract simulation and on a real robot platform
• Work on developing a system on the segway-base robot platform, conducting different tasks. The system has the following features: natural language processing, computer vision, task and motion planning, and reinforcement learning

Visiting Researcher at SUNY Binghamton Mar 2019 – Jan. 2020

• Research on integrating reinforcement learning and task planning for mobile robots to avoid exploring the less-relevant area. The experiments of this research were conducted in abstract simulation and a real robot navigation task
• Work on developing a robot system on the segway-base robot platform, conducting a variety of tasks in an indoor domain, such as navigating and delivery
• This work includes creating an occupancy grid map of a building, adjusting some parameters for optimizing motion control, and managing required ROS packages

WORK EXPERIENCE

Internship at Konica Minolta, Inc. Oct. 2020 – Jul. 2021

• Research on an efficient learning system for robot arms with meta-learning
• The aim of developing the system is to enable a robot to quickly adapt to new tasks and deal with some noises. The work was conducted on the PyBullet platform and the Techman Robot platform
• Develop a physics simulator for a robot arm on PyBullet. The robot arm is tasked to pick up an object to an arbitrary point and then place it in another place

SKILLS

- **Programming Languages**: Python, C/C++, ASP, Rust, Dart
- **Deep Learning Framework**: PyTorch
- **Robotics Softwares and Simulators**: ROS, Gazebo, Habitat, OmniGibson
- **Hardware Acquaintances**: Segway RMP 110, UR5e, Raspberry Pi
- **Tools and Frameworks**: Git, Django, Flutter

AWARDS

- **GECCO Best Paper Award (EML Track)**, 2022
- **UEC Meguro-kai award**: Awarded to Students who achieved excellent research outcomes at University of Electro-Communications, 2021 (Top 5%)
- **UEC President's Award for Students**: Awarded to Students who achieved excellent grades and outcomes at University of Electro-Communications, 2021 (Top 10%)
- **SSI Excellent Paper Award**, 2020
- **FIT Best Paper Award**, 2020
- **ARLISS UNISEC Award**: Awarded to the team tackling the most challenging mission of over-back CanSat, 2018
- **Iwate University Kusakari Award**: Awarded to Students who achieved excellent grades and outcomes at Iwate University, 2018 (Top 5%)