Yohei Hayamizu

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Anticipated Graduation Date: 05/2025

Note: This CV was last updated on September 6, 2023.

RESEARCH INTEREST

My research interests are Human-Robot Interaction (HRI) and Sequential Decision Making (SDM). I currently work on the Dialogue Navigation system that can adapt to spatial information and user intentions by interacting with humans in a physical environment to improve the robot's persuasion ability. In the realm of Sequential Decision Making (SDM), I am captivated by the potential synergy between Reinforcement Learning (RL) and knowledge bases.

EDUCATION

The State University of New York at Binghamton Aug. 2021 – May. 2025
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 Informatics, GPA: 2.80/3.00, Advisor: Prof. Keiki Takadama

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

PUBLICATIONS

1. **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. (Accepted)
2. Hiroki Shiraishi, **Yohei Hayamizu**, 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)
3. Hiroki Shiraishi, **Yohei Hayamizu (co-author)**, Hiroyuki Sato, and Keiki Takadama, *Beta Distribution-based XCS Classifier System*, IEEE Congress on Evolutionary Computation (CEC), 2022. (Paper)
4. Hiroki Shiraishi, **Yohei Hayamizu**, Hiroyuki Sato, and Keiki Takadama, *Can the Same Rule Representation Change its Matching Area? Enhancing Representation in XCS for Continuous Space by Probability Distribution in Multiple Dimension*, Proceedings of the Genetic and Evolutionary Computation Conference, (GECCO), 2022. (Paper)
5. 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)
6. Hiroki Shiraishi, **Yohei Hayamizu**, Hiroyuki Sato, and Keiki Takadama *Inheritance vs. Expansion: Generalization Degree of Nearest Neighbor Rule in Continuous Space as Covering Operator of XCS*, Proceedings of the Genetic and Evolutionary Computation Conference, (GECCO), 2022. (Paper)
7. **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)

8. 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)
9. Hiroki Shiraishi, Masakazu Tadokoro, **Yohei Hayamizu**, Yukiko Fukumoto, Hiroyuki Sato, and Keiki Takadama, *Increasing Accuracy and Interpretability of High-Dimensional Rules for Learning Classifier System*, IEEE Congress on Evolutionary Computation (CEC), 2021. (Paper)
10. **Yohei Hayamizu**, Saeid Amiri, Kishan Chandan, Keiki Takadama, and Shiqi Zhang, *Efficient Exploration in Reinforcement Learning Leveraging Automated Planning*, The NeurIPS-2020 Workshop on Robot Learning, 2020. (Paper, Video)

WORK EXPERIENCE

Teaching Assistant at SUNY Binghamton Aug. 2023 – Dec. 2023
• Introduction to Artificial Intelligence [CS465, CS565], Prof. Shiqi Zhang, Fall 2023. My duties involve assisting students in learning AI algorithms and grading their assignments

Teaching Assistant at SUNY Binghamton Jan. 2023 – May. 2023
• Intelligent Mobile Robotics [CS424, CS524], Prof. Shiqi Zhang, Spring 2023. My duties involve assisting students in learning ROS and grading their assignments.
• Introduction to Programming in Python [CS110], Prof. Steven Moore, Spring 2023. My duties involve assisting students in learning Python programming at a lab session and grading their assignments.

Teaching Assistant at SUNY Binghamton Aug. 2022 – Dec. 2022
• Introduction to Artificial Intelligence [CS465, CS565], Prof. Shiqi Zhang, Fall 2022. My duties involve assisting students in learning AI algorithms and grading their assignments

Research Assistant at SUNY Binghamton Aug 2021 – July. 2022
• Research on Visual-Dialogue Navigation system that robots communicate with humans during 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 robot system on the segway-base robot platform, conducting different tasks. The system has the following features: natural language processing, computer vision, and task and motion planning, and reinforcement learning

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 another place

Teaching Assistant at UEC Apr. 2020 – Sep. 2020
• Computer Literacy, Prof. Keiki Takadama, Spring 2020. My duties involved assisting undergraduate students in learning and creating scripts to grade their assignments

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

SKILLS

• **Programming Languages**: Python, C++, Rust, React
• **Libraries & Framework**: PyTorch, LangChain, Django, FastAPI, OpenCV, MoveIt
• **Hardware Acquaintances**: Segway RMP 110, Techman TM12, Kuka
• **Tools**: ROS, Git, AI Habitat, PostgreSQL

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%)
• **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
• **Kusakari Award**: Awarded to Students who achieved excellent grades and outcomes at Iwate University, 2018 (Top 5%)