Soichiro Nishimori

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Open-minded and curiosity-driven first-year master's student with a deep understanding and a strong preference for statistics and machine learning, able to learn independently, work in harmony with team members, and clear the obstacle through repeated hypothesis verification.

Education

Master of Engineering, Graduate School of Frontier Science, The University of Tokyo **Chiba**
Supervisor: Professor Masashi Sugiyama *Apr. 2022 - Present*

- Model-based RL, POMD RL, representation learning

Bachelor of Integrated Human Studies, Kyoto University **Kyoto**
Supervisor: Professor Shin Ishii *Apr. 2018 - Mar. 2022*

- Deepened understanding of Deep Learning and Reinforcement learning by reading relevant papers.
- Researched reinforcement learning algorithms under POMDP as a graduation thesis.
- Focus was on improving the existing method (IState-GPOMDP), which solves POMDP by policy gradient.
- Succeeded in incorporating neural network into the algorithm efficiently and realizing the interpretability of the agent by visualizing internal states of trained model.
- Submitted a paper to IJICAI 2022 workshop.

Experiences

Kyoto University **Kyoto**
Research Assistant *Dec.2019 - Apr. 2021*

- Weekly discussion with professor Ryosuke Kojima on statistics and machine learning.
- Read through the textbook “Pattern Recognition and Machine Learning” under the guidance of him.
- Analyzed a large scale EEG data of subjects who are doing silent reading in Python.

Scrumsign.Inc **Kobe**
Intern *Jan.2020 - Mar. 2021*

- Learned to use Python libraries for data science such as NumPy, Pandas, Scikit-Learn,and PyTorch.
- Worked on implementing a program to estimate inflammation of organs from blood components with EM algorithm, using data from blood tests of patients at Kumamoto University Hospital.

Training Course Experiences

Deep Reinforcement Learning Summer School 2020
Matsuo Lab, The University of Tokyo *Aug. 2020 - Sep. 2020*

- Learned wide range of reinforcement learning algorithms, and implementing representative ones such as DQN, PPO, DDPG, and Dreamer.
- Implemented DQN with prioritized experience replay in toy poker environment as the final project.

World Model lecture 2021
Matsuo Lab, The University of Tokyo *Dec. 2021 - Present*

- Learned a variety of topic relevant to world model in machine learning such as model-based RL, deep generative models, representation learning.
- Implementing Hip-RSSM proposed in this paper as a final project.

Projects

Creating fast Riichi Mahjong simulator and strong agent

- **A** member of the group creating a 100x faster Riich Mahjong simulator(the repository has not been published).
- In charge of making a translation server between our simulator and the existing simulator written in Ruby, and designing features for an RL agent.

Skills and Interests

Programming Languages, Frameworks, and Tools: Python, Ruby, PyTorch, TensorFlow, Keras, Pyro, TensorFlow Probability, NumPy, Pandas, Matplotlib, Django, Git/Github, Docker, Linux
Knowledge: Statistics, Bayes modeling, General RL, Model-based RL
Languages: Japanese, English(TOEFL-iBT 96)
Interests: Model-based RL, POMDP-RL, Statistical-RL, World Model, Theory of Consciousness