Changwoo Yoo

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Research Interests

My research goal is to develop generalizable robots using deep neural networks. Toward this goal, I am focusing on developing deep reinforcement learning algorithms for robotics with the following topics:

- Robotics with language prior
- Skill-based Reinforcement Learning
- Offline Reinforcement Learning
- World models
- Reinforcement Learning Theory

Education

Korea University 2020.03 - Current
B.S. at Computer Science and Engineering *Seoul, South Korea*
GPA: 4.00/4.50 (major 4.13/4.50)

Publication

*: 1st co-authors, †: corresponding authors, C: conferences, J: journals, W: workshops, P: preprints

2025

[**P1**] *Learning Social Navigation from Positive and Negative Demonstrations and Rule-Based Specifications.* **Under Review**, 2025.

Experience

RLLAB, Yonsei University Jan 2026 - Current

– Research Intern, Advised by prof. Youngwoon Lee.

RILAB, Korea University Mar 2025 - Nov 2025

– Research Intern, Advised by prof. Kyungjae Lee.
– Acquired foundational knowledge in Reinforcement Learning theory and bandit algorithms.
– Researched mobile robot path planning in the crowded environments.
– Implemented and evaluated various deep RL algorithms, such as Proximal Policy Optimization (PPO) and TD3 with Behavioral Cloning (TD3+BC).

UTL Lab, Korea University Jan 2025 - Mar 2025

– Research Intern, Advised by prof. Donghyun Kim.
– Conducted research on Scene Graph Generation, focusing on the analysis of state-of-the-art models.
– Performed a comparative analysis of existing algorithms by running experiments on models such as IETrans, CFA, and CaCao.

Google for Developers Maching Learning Bootcamp 2024 Jul 2024 - Oct 2024

– Completed Coursera's Deep Learning Specialization.
– Achieved a top 8% ranking in a Kaggle competition.
– Completed an end-to-end project in the Gemma Sprint, successfully deploying a fine-tuned model on the Kaggle platform.

Work Experience

Bravemobile (Soomgo) Dec 2022 - Jan 2025

– **Software Engineer, React Native** (Alternative Military Service)
– Developed and launched major features for the Soomgo mobile app, including the Soomgo Calendar, an auto-reply chatbot, and an in-app calling system.
– Streamlined the CI/CD pipeline, reducing automated testing and deployment times by up to 95%.
– Co-authored the '@bravemobile/react-native-code-push' library to standardize and simplify the over-the-air update process.

Nudge Healthcare (Cashwalk) Aug 2022 - Oct 2022

– **Backend Engineer**
– Ensured high availability and reliability for backend services supporting up to 800,000 concurrent users.

Activities

Google Student Ambassador Sep 2025 - Current

– Student Ambassador for promoting Gemini to university students.
– Promoted Gemini's capabilities to students by hosting events and using social media.

AIKU (AI @Korea University) Jan 2025 - Current

– 5th cohort member
– Placed 1st in the 8th AIKUTHON and 2nd in the AIKU x KUBIG Datathon.
– Investigated advanced topics, including the mathematical principles of diffusion models, reinforcement learning theory, and bandit algorithms.

KWEB (Korea University Web Master) Aug 2021 - Jan 2024

– **President** (Spring 2023) & **Vice President** (Fall 2022)
– Directed and contributed to the development of major campus web platforms, including the official KWEB website, KLUE (Korea Univ Lecture Evaluation), and KLUB (Korea Univ Club portal).

Projects

KWEB Official Website Link

Served as **Team Lead**, overseeing full-stack development and DevOps for the organization's official online presence from architecture to deployment.

KLUE (Korea Univ Lecture Evaluation system) Link

Developed the admin site for Korea University's lecture evaluation service, creating essential tools for platform maintenance, content moderation, and data oversight.

KLUB (Korea Univ Club) Link

Managed the production infrastructure and CI/CD pipelines for a central platform serving student clubs at Korea University, ensuring reliable and automated operations.

AI Generated Image Detection Link

Served as **Team Lead**. Compared ImageNet and diffusion model priors for AI-generated image detection. To exploit the diffusion prior, designed a hybrid VAE model and a contrastive learning pipeline. Concluded that the ImageNet prior is superior to diffusion prior through empirical analysis.

Skills

Programming Skills	C, Python, Pytorch, Mujoco and Gymnasium etc.
Language	Korean (Native proficiency), English (Professional proficiency)