

Juyong Lee

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GitHub

Google scholar page

- Interest** Building practical autonomous agents toward super-human intelligence is my high-level research goal. I am currently pursuing a PhD (2nd year) under the supervision of **Kimin Lee**. I consider reinforcement learning (RL) and large language models (LLMs) as essential components, with the belief that scaling data and efficient compression modeling are key. I envision agents learning to solve **complex decision-making problems**, as exploring virtual/physical worlds with control capability (e.g., utilizing digital devices). These complex problems encompass tool generation (e.g., API), mathematics, and interactions with humans (e.g., safety).
- Keywords:** Digital device control, LLM agents, RL agents
- Publication** So far, I have contributed to the community, mainly via research, as in tailoring benchmarks for agents controlling mobile devices (for safety and generalization ability), developing RL algorithms, and proposing novel efficient representation learning methods. Recently, I have closely collaborated with **W. Bradley Knox** at the University of Texas at Austin and **Yee Whye Teh** at the University of Oxford.
- (*: equal contribution, J: Journal, C: Conference, W: Workshop, P: Preprint)
- [P2] **Evaluating Safety of Autonomous Agents in Mobile Device Control**
J. Lee*, D. Hahm*, J. Choi*, W. B. Knox, K. Lee; under review
- [P1] **Learning to Contextualize Web Pages for Enhanced Decision Making by LLM Agents**
D. Lee*, J. Lee*, K. Kim, J. Tack, J. Shin, Y. W. Teh, K. Lee; under review
- [W2] **Benchmarking Mobile Device Control Agents across Diverse Configurations**
J. Lee, T. Min, M. An, C. Kim, K. Lee; ICLR 2024 workshop GenAI4DM ([spotlight presentation](#))
- [W1] **Unsupervised Reinforcement Learning with Foundation Models as Teachers**
T. Nam*, J. Lee*, J. Zhang, S. Hwang, J. Lim, K. Pertsch; NeurIPS 2023 workshop ALOE
- [C3] **Hyperbolic VAE via Latent Gaussian Distributions**
S. Cho, J. Lee, D. Kim; NeurIPS 2023, ICML 2023 workshop TAGML, KAIA2022 ([3rd best paper](#))
- [C2] **A Rotated Hyperbolic Wrapped Normal Distribution for Hierarchical Representation Learning**
S. Cho, J. Lee, J. Park, D. Kim; NeurIPS 2022
- [C1] **Style-Agnostic Reinforcement Learning**
J. Lee*, S. Ahn*, J. Park; ECCV 2022
- [J1] **A 3D Cell Printed Muscle Construct with Tissue-Derived Bioink for the Treatment of Volumetric Muscle Loss**
Y. Choi, Y. Jun, D. Kim, H. Yi, S. Chae, J. Kang, J. Lee, G. Gao, J. Kong, J. Jang, W. Chung, J. Rhie, D. Cho; Biomaterials 2019
- Education** Korea Advanced Institute of Science & Technology (KAIST): M.S., Kim Jaechul Graduate School of AI
Stanford University: Exchange student
Pohang University of Science and Technology (POSTECH): B.S., Computer Science & Mathematics (double major)
Daegu Science High School for gifted
- Experience** PhD student at KAIST Aligned Behavioral Intelligence Lab., advised by Kimin Lee (2023 - [current](#))
Research internship at POSTECH Computer Vision Lab. (2021 - 2022)
Military service (vehicle repair administrator work) at Republic Of Korea Army (2019 - 2020)
Research internship at POSTECH Robotics Lab. (2017 - 2018)
- Talk** Tech summit, Hyundai motor group (2024)
ICLR Workshop on Generative Models for Decision Making (2024)
AI Expo, Korea (2024)
- Honors** 3rd best paper, Korean Artificial Intelligence Association (KAIA) 2022
2nd best award on undergraduate thesis, CSE POSTECH 2021 & 2022
2nd best award on undergraduate students research program, POSTECH 2019
- Skills** Mathematics for AI (proficient), Pytorch (proficient), Python (proficient), C++ (intermediate), English (fluent)