

Changyeon Kim

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Research Interest

My research interest lies in the intersection of AI and robot learning. Specifically, I am committed to designing algorithms tailored for complex environments lacking well-defined rewards by learning suitable reward functions utilizing human preferences or foundational vision language models. In addition, I am interested in related areas of decision-making problems, including (M)LLM agents, offline RL, and generalization in RL.

Education

Korea Advanced Institute of Science and Technology

PHD IN ARTIFICIAL INTELLIGENCE

Advisor: Jinwoo Shin and Kimin Lee

Daejeon, S.Korea

Mar. 2022 - Present

Korea Advanced Institute of Science and Technology

B.SC. IN COMPUTER SCIENCE AND MATHEMATICS (MINOR)

Daejeon, S.Korea

Mar. 2016 - Feb. 2021

Publications

C: Conference, W: Workshop, P: Preprint, *: Equal contribution

[P1] Subtask-Aware Visual Reward Learning from Segmented Demonstrations

CHANGYEON KIM, MINHO HEO, DOOHYUN LEE, JINWOO SHIN, HONGLAK LEE, KIMIN LEE, JOSEPH J LIM

- Preprint (Available upon request).

[W2] B-MoCA: Benchmarking Mobile Device Control Agents across Diverse Configurations

JUYONG LEE, TAYWON MIN, MINYONG AHN, DONGYOON HAHM, HAEONE LEE, CHANGYEON KIM, KIMIN LEE

- ICLR 2024 Workshop on Generative Models for Decision Making (ICLRW), *Spotlight*

Vienna, Austria

May, 2024.

[C3] Guide Your Agent with Adaptive Multimodal Rewards

CHANGYEON KIM, YOUNGGYO SEO, HAO LIU, LISA LEE, JINWOO SHIN, HONGLAK LEE, KIMIN LEE

- Conference on Neural Information Processing Systems (NeurIPS), 2023.
- A preliminary version appeared at ICML 2023 Workshop on New Frontiers in Learning, Control, and Dynamical Systems (ICMLW)

New Orleans, USA

Dec, 2023.

[C2] Preference Transformer: Modeling Human Preferences using Transformers for RL

CHANGYEON KIM*, JONGJIN PARK*, JINWOO SHIN, HONGLAK LEE, PIETER ABBEEL, KIMIN LEE

- International Conference on Learning Representations (ICLR), 2023.

Kigali, Rwanda

May, 2023.

[W1] Dynamics-Augmented Decision Transformer for Offline Dynamics Generalization

CHANGYEON KIM*, JUNSU KIM*, YOUNGGYO SEO, KIMIN LEE, HONGLAK LEE, JINWOO SHIN

- NeurIPS 2022 Workshop on Offline Reinforcement Learning (NeurIPSW)

New Orleans, LA, USA

Nov, 2022.

[C1] Collecting the Public Perception of AI and Robot Rights

GABRIEL LIMA, CHANGYEON KIM, SEUNGHO RYU, CHIHYOUNG JEON, MEEYOUNG CHA

- Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), 2020.

Online

Oct, 2020.

[P1] MOI-Mixer: Improving MLP-Mixer with Multi Order Interactions in Sequential Recommendation

HOJOON LEE, DONGYOON HWANG, SUNGHWAN HONG, CHANGYEON KIM, SEUNGRYONG KIM, JAEGUL CHOO

- ArXiv Preprint.

Work Experience

External Collaborator

JOSEPH J. LIM (KAIST)

- Developed a visual reward learning algorithm [P1] for solving complex long-horizon robotic manipulations.

Seoul, KAIST

Mar. 2024 - June. 2024

External Collaborator

LISA LEE (GOOGLE RESEARCH)

- Developed an imitation learning algorithm [C3] using multimodal representations for improving generalization ability in unseen variations.

Remote

Apr. 2023 - Aug. 2023

External Collaborator

Remote

HONGLAK LEE (UNIVERSITY OF MICHIGAN)

Mar. 2022 - June. 2024

- Developed an imitation learning algorithm [C3] using multimodal representations for improving generalization ability in unseen variations.
- Developed a reinforcement learning algorithm [W1] for improving generalization ability in varying dynamics.
- Developed a preference-based reinforcement learning algorithm [C2] for modeling non-Markovian human preferences.
- Developed a visual reward learning algorithm [P1] for solving complex long-horizon robotic manipulations.

Machine Learning Engineer

Seongnam, S.Korea

KAKAO, RECOMMENDATION TEAM

Dec. 2020 - Feb. 2022

- Developed ML platform for recommendation system.
- Developed Python backend for a web application providing data analysis and visualization of Kakao data.
- Implemented data pipeline from user feedback to refined user-item interaction matrix data.
- Deployed DropoutNet for providing qualitative recommendations to cold-start users.

Research Intern

Seongnam, S.Korea

KAKAO, RECOMMENDATION TEAM

Jun. 2020 - Aug. 2020

- Developed an advanced similar recommendation model for Piccoma (cartoon platform of Kakao Japan).
- Conducted research on relationships between offline/online evaluation on the recommendation system.

Research Intern

Daejeon, S.Korea

DATA SCIENCE GROUP, INSTITUTE OF BASIC SCIENCE

Jul. 2019 - Nov. 2020

- Conducted research on how much human rights can be granted to robots using AMT (Amazon Mechanical Turk) [C1].
- Implemented BiLSTM model for extracting game highlight by game log.
- Conducted research identifying the "Pilgrimage" articles and analyzing its pattern in Naver News corpora.

Research Interen

Seoul, S.Korea

NETMARBLE

Jun. 2018 - Aug. 2018

- Implemented algorithm for detecting "fraud" account in online-game
- Analyzed repetitive group reaction from time-series data of game activities.

Honors & Awards

2023	Travel Award , Conference on Neural Information Processing Systems (NeurIPS)	New Orleans, USA
2023	Scholarship , KAIST-Google Partnership Program	Daejeon, S.Korea
2023	East Asia Student Travel Grant , Google	New Orleans, USA
2023	Travel Award , International Conference on Learning Representations (ICLR)	Kigali, Rwanda
2019	Dean's List (Fall Semester) , Department of Engineering, KAIST	Daejeon, S.Korea
2019	Line Scholarship (Fall Semester) , School of Computing, KAIST	Daejeon, S.Korea
2017 - 19	National Science and Engineering Scholarship , Korea Ministry of Science and ICT	Daejeon, S.Korea
2017	Kwanjeong Scholarship (Spring Semester) , KAIST	Daejeon, S.Korea

Invited Talks

Guide Your Agent with Adaptive Multimodal Rewards

NeurIPS 2023

IMITATION LEARNING FRAMEWORK WITH VLM REWARDS FOR BETTER GENERALIZATION

- LG AI Research, New Orleans, USA (2023)

Academic Services

Conference Reviewer ICML (2024), NeurIPS (2024)

Workshop Reviewer ICML Workshop on New Frontiers in Learning, Control, and Dynamical Systems (Frontiers4LCD) 2023

Skills

ML/DL	Pytorch, Pytorch-lightning, JAX/Flax
Programming	Python, C++
Big Data	Kafka, SQL, MongoDB, Hadoop, Trino(Presto)
DevOps	Git, Docker, Kubernetes
Languages	Korean (Native), English (Fluent), Japanese (Advanced)