

# Improving Embodied Instruction Following with Deterministic Methods

Dahyun Kim\*, Yong-Ju Lee\*\*

\* *Dept. of Electrical Engineering, Korea University*

\*\* *Electronics and Telecommunication Research Institute, Daejeon, Korea*

[dahyunkeem@korea.ac.kr](mailto:dahyunkeem@korea.ac.kr), [yongju@etri.re.kr](mailto:yongju@etri.re.kr)

**Abstract**— We propose a modified module structure of FILM, which increases its performance on ALFRED benchmark. Despite methods like imitation learning or reinforcement learning can be used, we will show it is possible to improve the performance by simply modifying the deterministic policy module. our approach aims to use the semantic segmented visual observation when navigating to the target location. Additionally, we propose a method of adaptive decision making for active search. Through active search, the agent can search for the target object by opening closed receptacles. Also, we provide some minor adjustments which helps the agent overcome some semantic segmentation errors. We evaluate the modified FILM with the ALFRED benchmark and achieved the performance of 25.37% with valid seen split and 20.46% with valid unseen split, thus succeeding in improving the performance of the original architecture with a small margin. Additionally, the modified FILM showed a significant improvement in the result of task type “Cool & Place” with a large margin (8.82%), which shows that active search is effective.

**Keyword**— Embodied Instruction Following, FILM, ALFRED benchmark, Embodied AI



**Dahyun Kim.** She is currently an undergraduate student in the School of Electrical Engineering at Korea University. She worked as an intern at Electronics and Telecommunication Research Institute from 2022.07–2022.08.



**Yong-Ju Lee** received the B.S. degree and M.S. degree in computer engineering from Chonbuk National University, Jeonju, Republic of Korea, in 1999 and 2001, respectively, and the Ph.D. degree in computer engineering from the Chungnam National University, Daejeon, Republic of Korea, in 2011. Since 2016, she has also been with the ICT Department, University of Science and Technology (UST), where he is currently an Assistant Professor. Since 2020, he has been working at the leader of Visual Intelligence Research Section, Artificial Intelligence Research Laboratory, Electronics and Telecommunications Research Institute (ETRI), Daejeon. His research interests include edge-based AI, Collaborative Learning Agent, Multimodal/Crossmodal Deep Learning.