

LEARNING MACHINES CAN CURL - ADAPTIVE DEEP REINFORCEMENT LEARNING ENABLES THE ROBOT CURLY TO WIN AGAINST HUMAN PLAYERS IN AN ICY WORLD



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Introduction

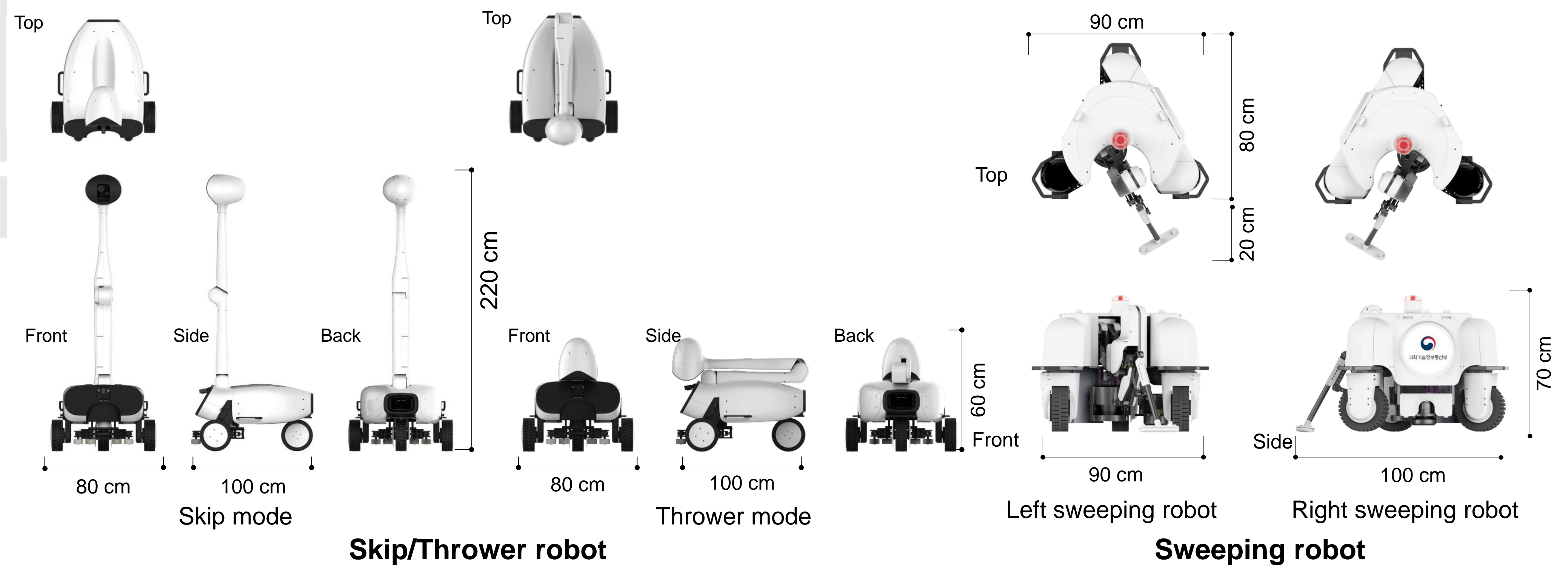
Research background

- Recently, most artificial intelligence (AI) based learning systems act in virtual or laboratory environments

Objective

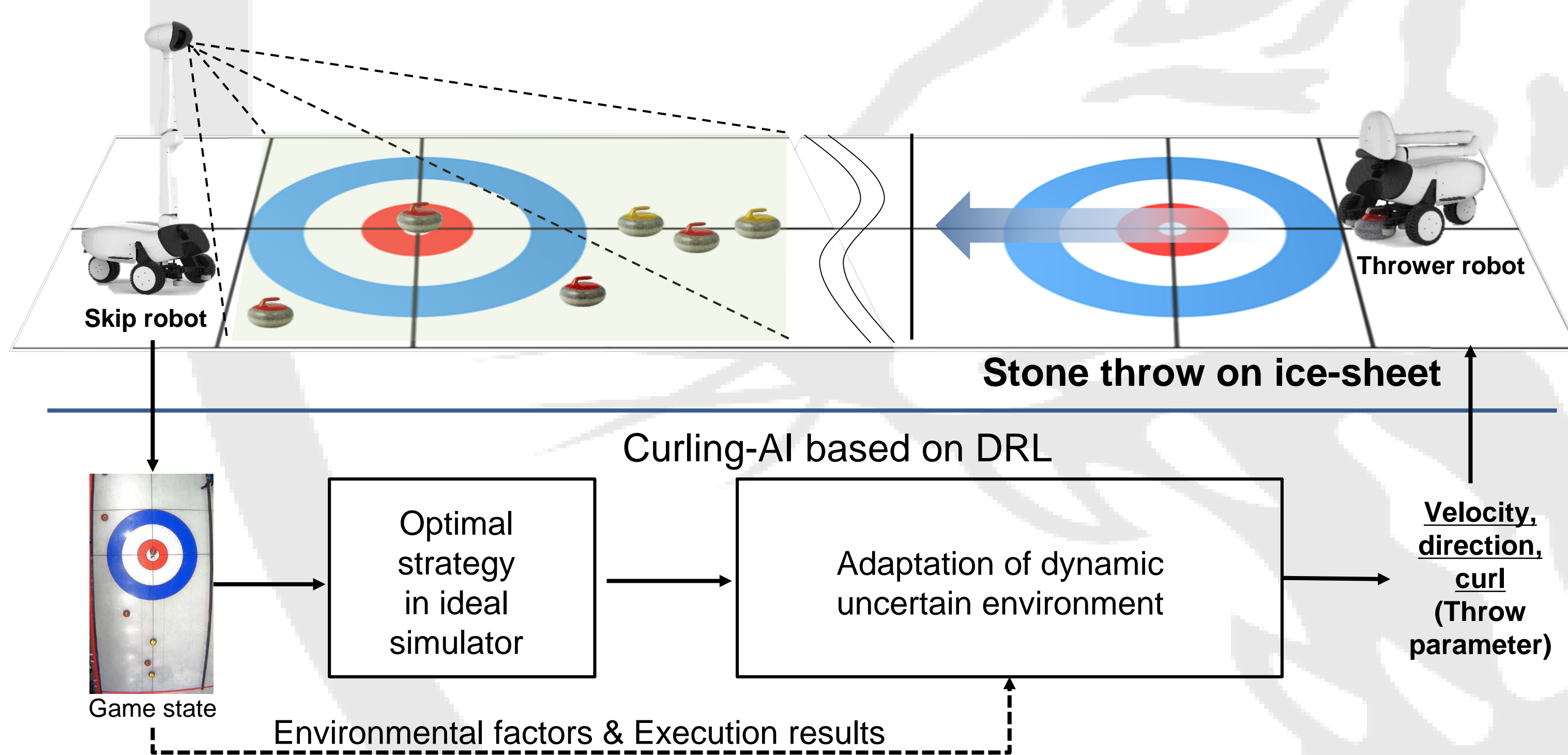
- The fundamental objective is to understand and model the transfer in a better manner from simulation to real world scenarios

AI Curling Robot (Curly)



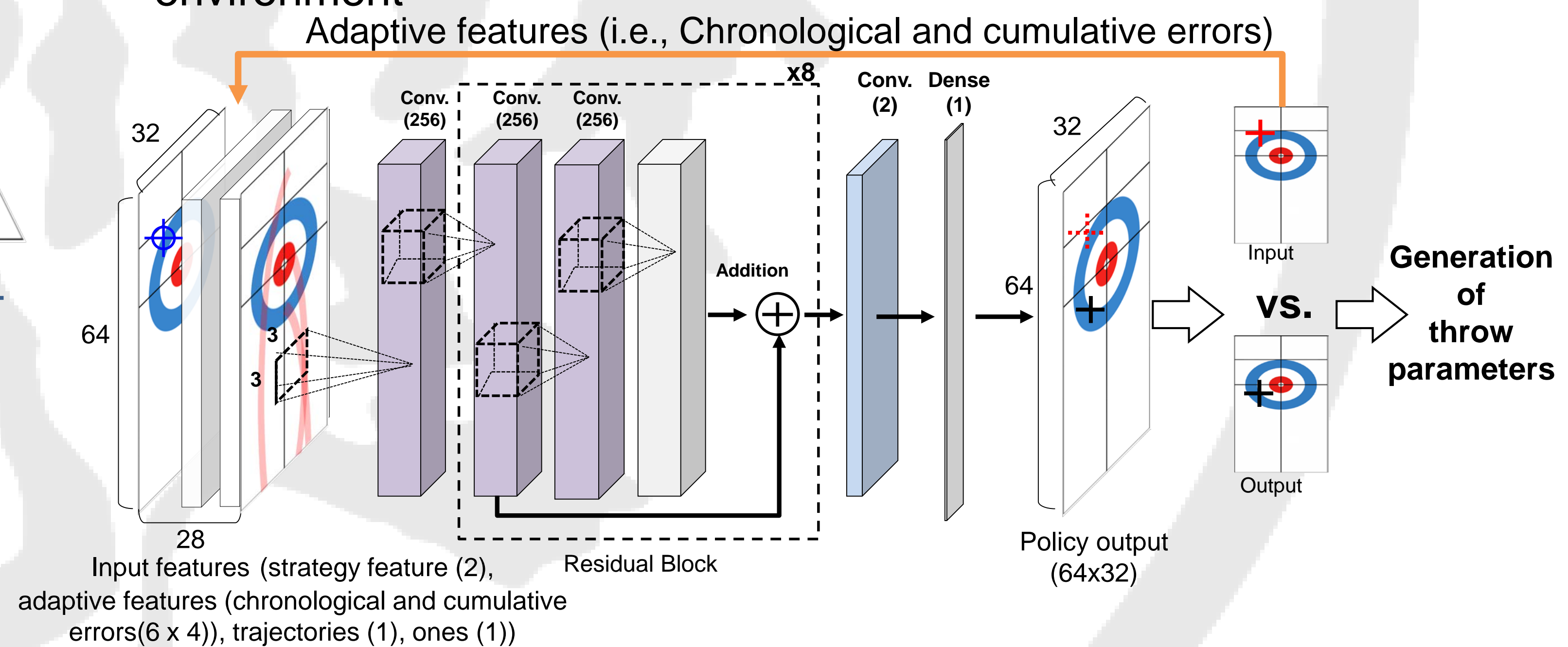
Methods

An overview of the AI curling robot system



Development of a DRL Framework

- A novel DRL framework which can transfer an action to the environment



Results and Discussion

Matches with National Curling Teams

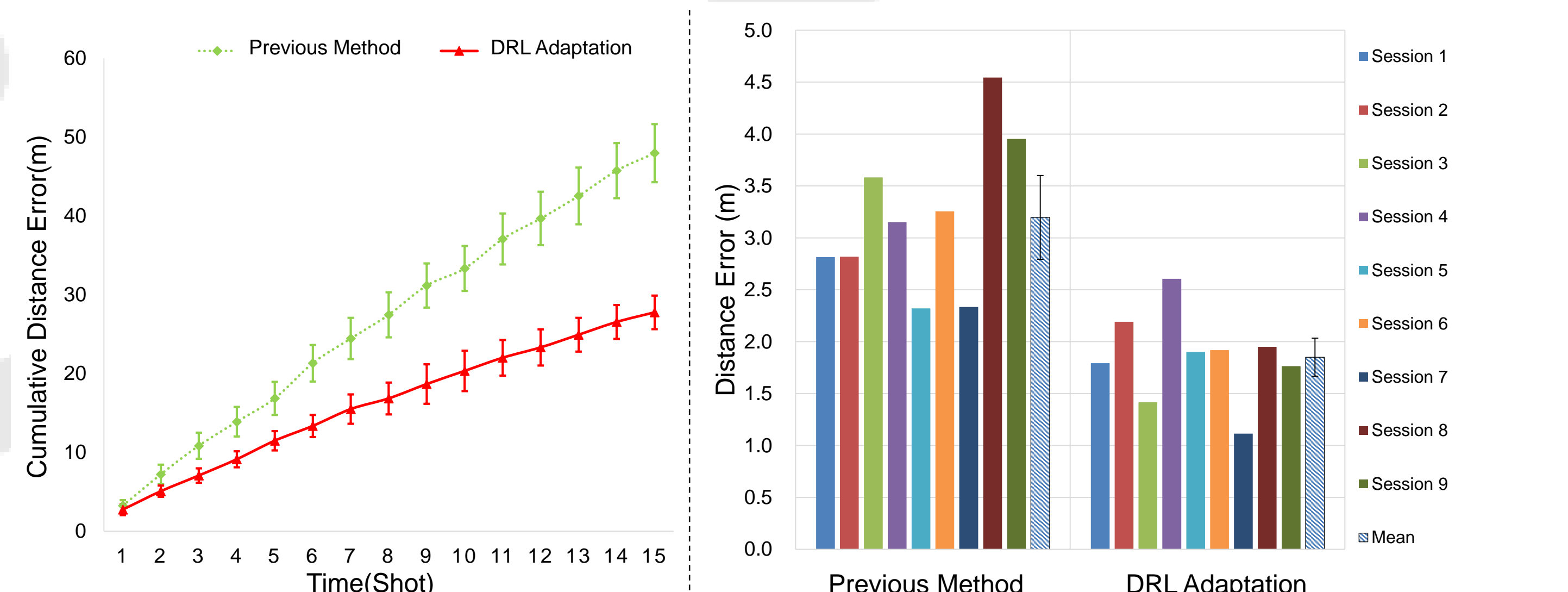
	Feb. 13, 2018	Feb. 20, 2018	Feb. 22, 2018	Mar. 8, 2018
Results	3:4 (Lose)	4:7 (Lose)*	5:3 (Win)	2:3 (Lose)

*Korean national wheelchair curling team

	Nov. 30, 2018	Dec. 7, 2018	Dec. 14, 2018	Dec. 19, 2018	Dec. 31, 2018
Results	4:4 (Draw)	5:1 (Win)	4:3 (Win)	4:2 (Win)**	4:7 (Lose)

**Korean national wheelchair curling team

Online Test (Throw) in Real Curling Ice Sheet



Conclusion

- The proposed DRL framework minimizes the gap between the simulation and the real-world environment