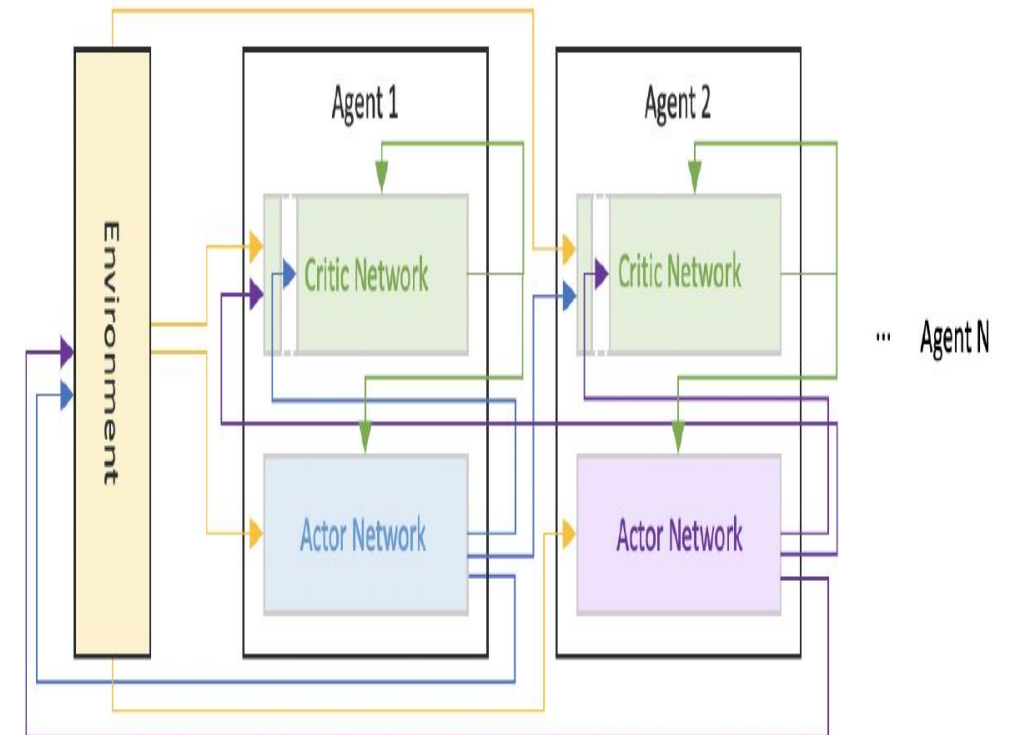


연구소개

(UAM을 위한) DRL 기반 멀티 에이전트 시스템

An Efficient and Stable Actor-Multi-Attention-Critic Model for Multi-Agent Reinforcement Learning



An Efficient and Stable Actor-Multi-Attention-Critic Model for Multi-Agent Reinforcement Learning

A goal of multi-agent reinforcement learning

- learning optimal policy that maximize accumulated rewards for joint goal

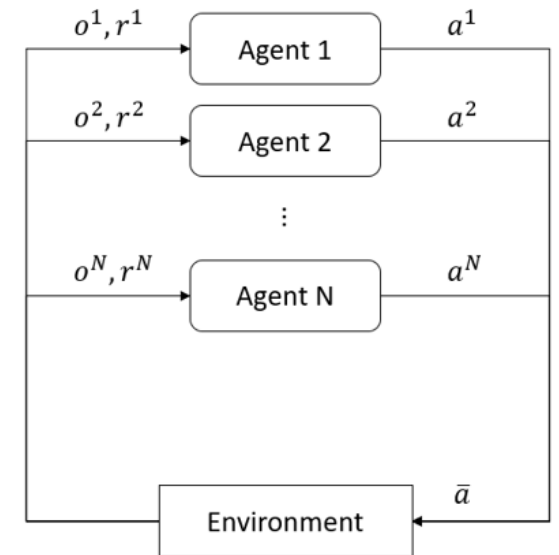
Difficulties of multi-agent learning

- non-stationary environment
- credit assignment problem

Proposed in this work

→ a new Actor-Multi-Attention-Critic model

- This model solve the instability of Q-value estimation that may occur due to these problems



An Efficient and Stable Actor-Multi-Attention-Critic Model for Multi-Agent Reinforcement Learning

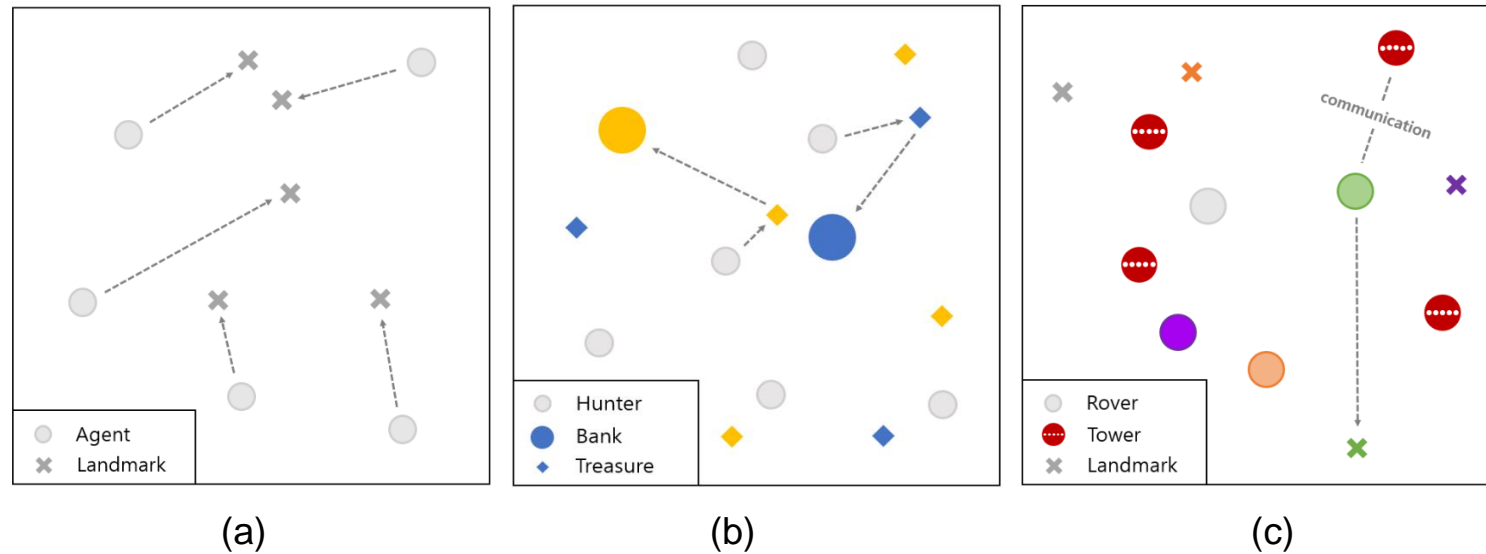
Proposed in this work

→ a new Actor-Multi-Attention-Critic model

- Focus on Role of Critic!
- The stability of learning is improved by fixing the information of other agents by separating the input values for the target agent
- By applying multi-attention, the target agent selectively uses information of other agents, thereby improving the efficiency of learning.

An Efficient and Stable Actor-Multi-Attention-Critic Model for Multi-Agent Reinforcement Learning

Experimental environments



- OpenAI's Multi-agent particle environment
- (a) cooperative navigation - ex) unmanned vehicle dispatch
- (b) cooperative treasure collection - ex) unmanned parcel collection
- (c) rover-tower - ex) unmanned aerial vehicle traffic control

UAV Control

- Hight Level Control
 - Taking-Off
 - Auto Pilot (자동 비행)
 - Object Detection
 - Object Avoidance
 - Path Navigation
 - Landing
 - Object Tracking (물체추적)
 - Object Detection
 - Object Tracking
- Low Level Control
 - 자세제어, 고도변경