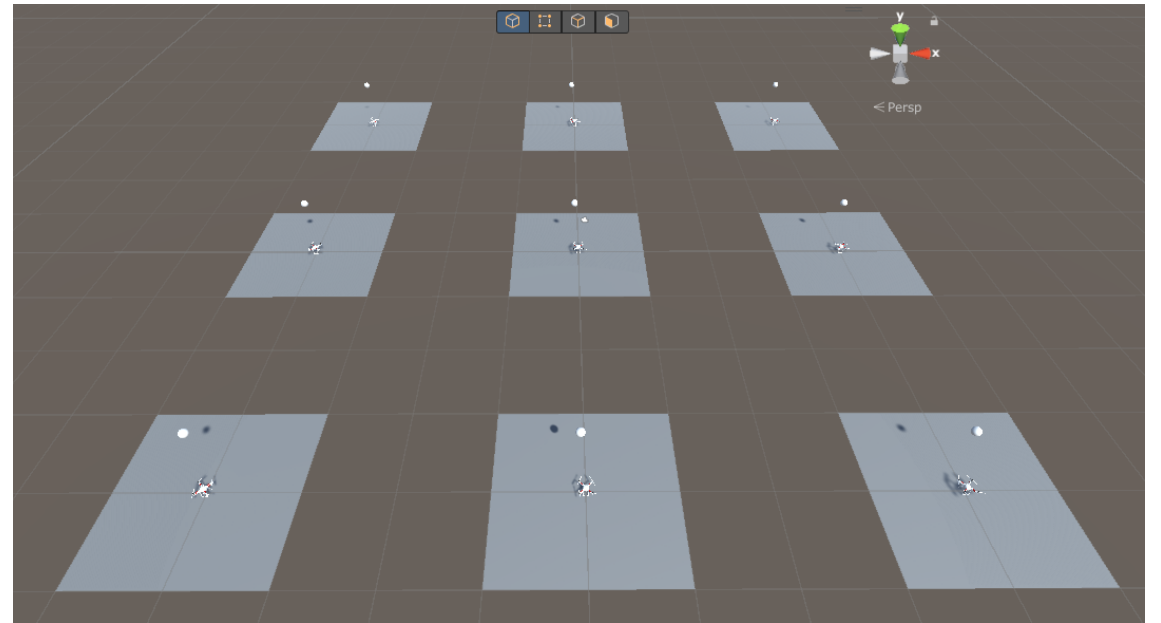
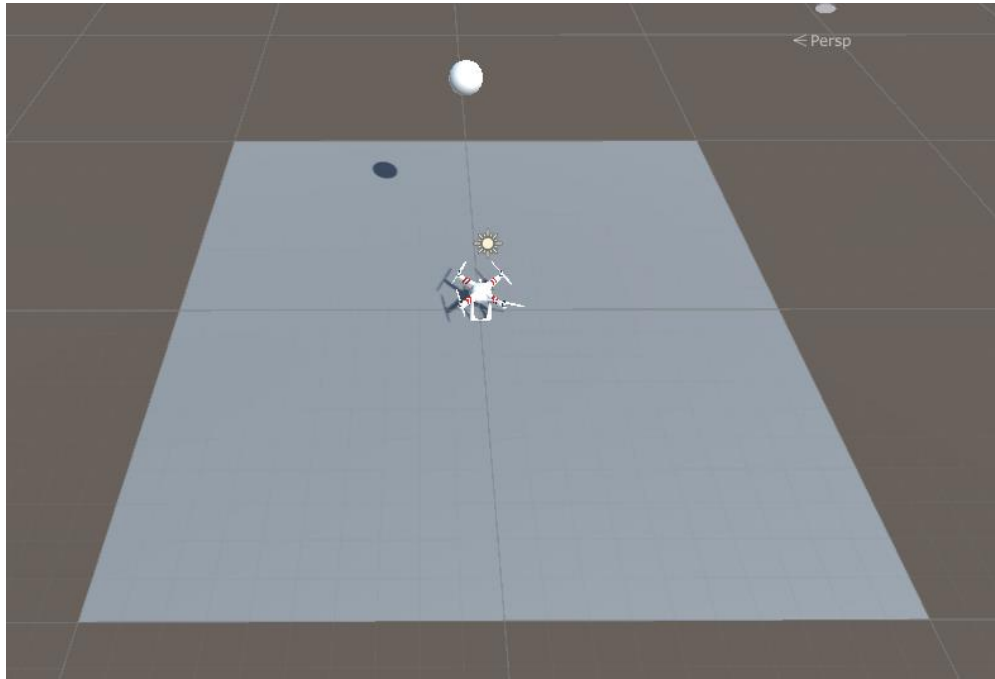


ml-agent를 활용한 드론 제어



2019305050 이제희

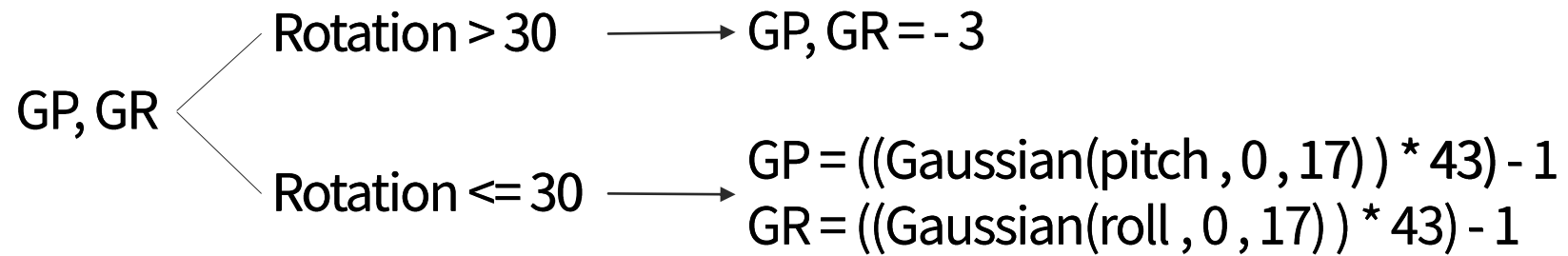
Unity 환경



모델 상태

state		value
Target location	x	-5 ~ 5
	y	9
	z	-5 ~ 5
Drone location	x	- ∞ ~ ∞
	y	
	z	
Drone rotation	roll	0 ~ 360
	pitch	
	yaw	
Drone Velocity (m/s)	fr	0 ~ 6
	fl	0 ~ 6
	br	0 ~ 6
	bl	0 ~ 6

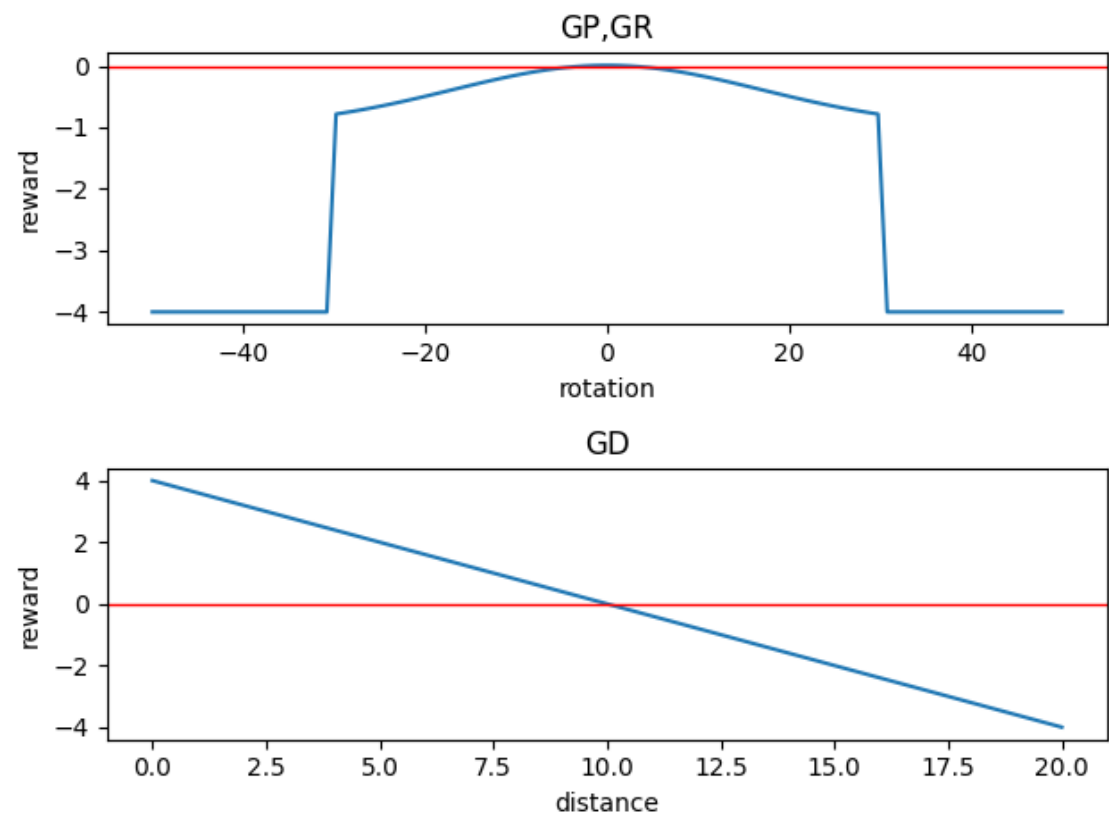
Reward



GD — Distance ≥ 0 → $GD = - (4 * distance / fix_distance) + 4$

* fix_distance:
episode 초기 distance를 구해둔 것

Reward



* Fix_distance=10인 경우

		GP	GR
reward	Rotation<=30	-0.787.. ~ 0	0.787.. ~ 0
	Rotation>30	-4	-4

		GD
reward	Distance>=0	$-\infty \sim 4$
	Distance<0	$-\infty \sim 4$



Reward

$$\text{Reward} = \text{GP} + \text{GR} + \text{GD}$$

×

if

Pitch & roll $< 90^\circ$

Reward = -1000

에피소드 종료

Drone location $x, z > 10$

Reward = -1000

에피소드 종료

Step > 5000

Reward = 1000

에피소드 종료

결과 그래프 생성

