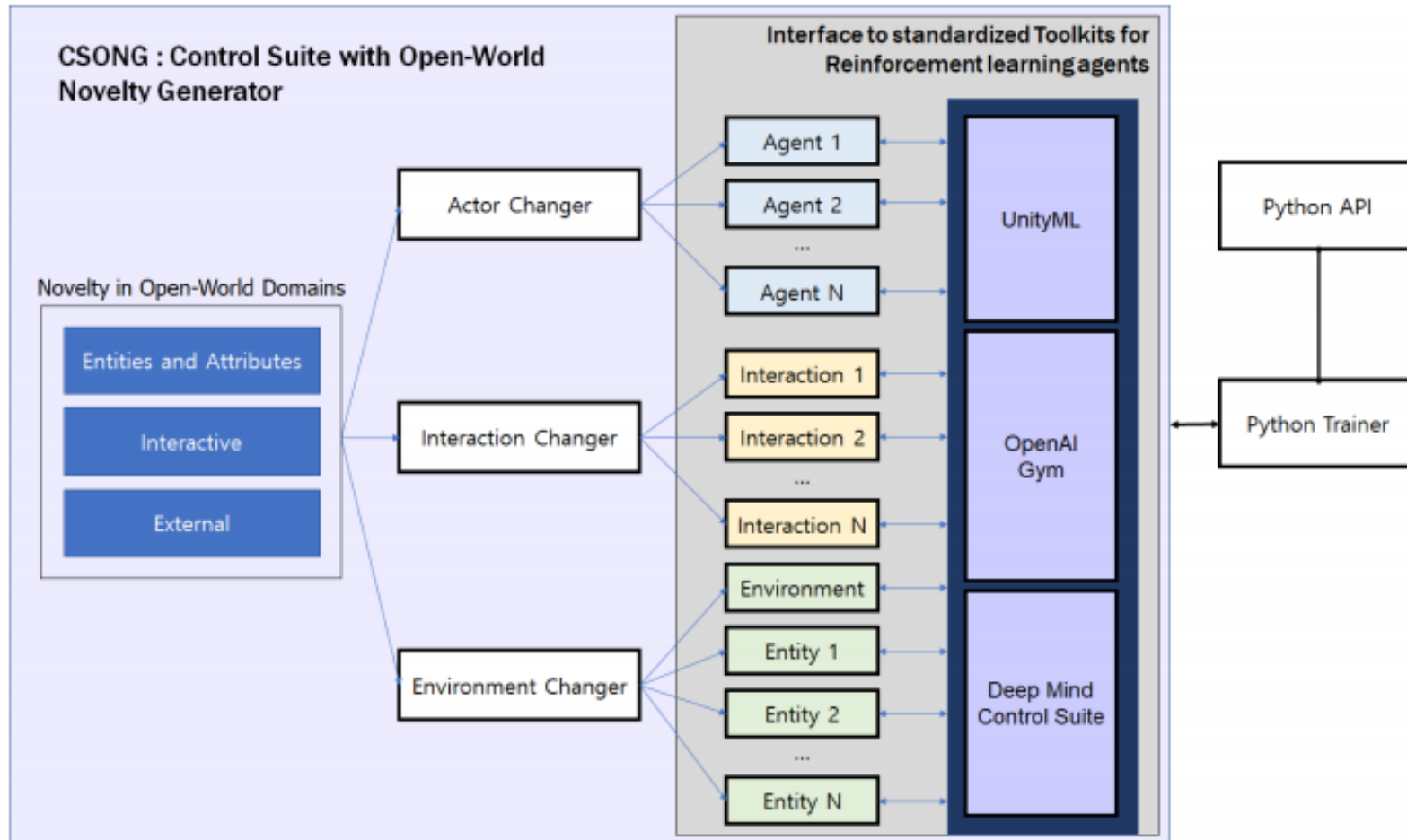


# CSONG Development

## CSONG : RL Control Suite with Open-World Novelty Generator



# CSONG Development : Server side of CSONG

Novelty Authoring Tool for CSONG : Control Suite with Open-World Novelty Generator

Domain Selector

Mujoco Domain  
Ant

Domain Editor

State Space

Unique ID Leg10  
Total Type Count 2 Dimension : 6  
Type 1 Position(x, y, z)  
Type 2 Angular Velocity(Vx, Vy, Vz)

Action Space

Joint# Leg10  
Total Action Types 2  
Action Type 1  
Action Type 2

Other Parameters

Ant xml  
Legs#

Relation Editor

Property of Objects

Replacement Shortcut : Ctrl + Num 1  
Object Property 1 A:WInteractionBehaviorWfriendly-soft.cs  
Object Property 2 A:WInteractionBehaviorWfriendly-strict.cs  
Object Property 3 A:WInteractionBehaviorWadversarial-soft.cs  
Object Property 4 A:WInteractionBehaviorWadversarial-strict.cs

Reward of Actions

Replacement Shortcut : Ctrl + Num 1  
Reward 1 A:WRewardsOfActionsWReward1.cs  
Reward 2 A:WRewardsOfActionsWReward2.cs  
Reward 3 A:WRewardsOfActionsWReward3.cs  
Reward 4 A:WRewardsOfActionsWReward4.cs

Environment Editor

Environment Change

Ground Size : Width 100 Length 100 Tiled?  
Tile Size : X 100 Y 100  
Physics Engine : ☒ PhysicsX ☐ pyBullet ☐ MJFC

Entities(Obstacles)

Total Entity Count : 3  
Entity 3D Model : A:WModelWObstacle1.fbx  
Entity 1 : Pos X 0 Y 0 Z 0 Vel X 0 Y 0 Z 0  
Entity 2 : Pos X 10 Y 10 Z 10 Vel X 0 Y 0 Z 0  
Entity 3 : Pos X 0 Y 0 Z 10 Vel X 0 Y 0 Z 0

Goal Change

Replacement Shortcut : Ctrl + Num 2  
Goal Template 1 A:WGoalsWgoal1.cs  
Goal Template 2 A:WGoalsWgoal2.cs  
Goal Template 3 A:WGoalsWgoal3.cs  
Goal Template 4 A:WGoalsWgoal4.cs

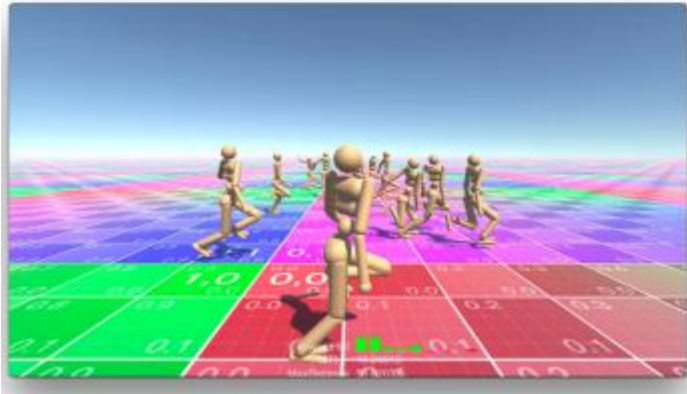
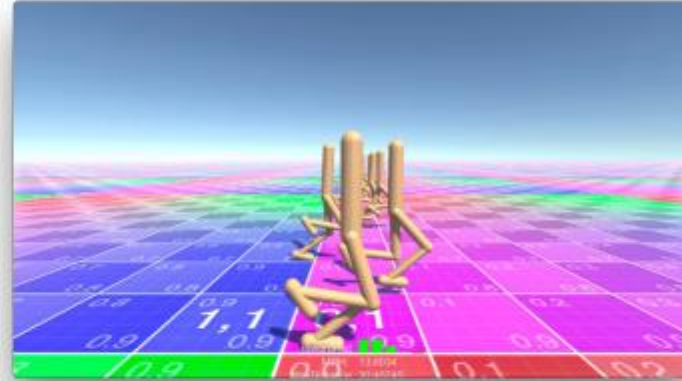
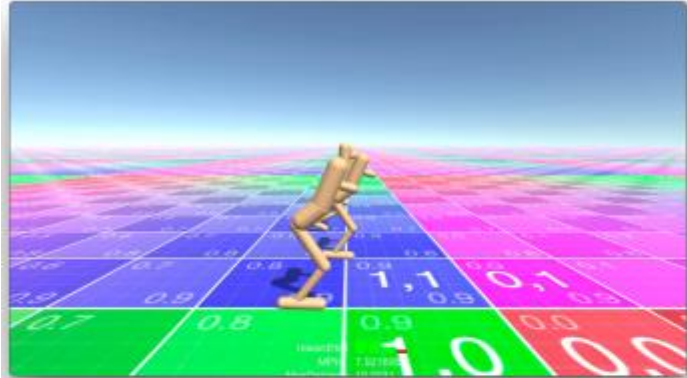
Reset

Apply Changes

Quit

Server Side is Windows Form Application by C# (.NET Framework)

# CSONG Development : Client side of CSONG



I implemented  
CSONG for Ant Model.

In future, CSONG will be  
Implemented for all Models

Unity ML-Agents. The Marathon Environments

# CSONG Development : Final Result

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Please enter to download video for knowing how **CSONG** works :

Video link : [https://github.com/aavuzb/project\\_videos/raw/main/CSONG\\_Result.avi](https://github.com/aavuzb/project_videos/raw/main/CSONG_Result.avi)