

Environment explanation

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Class: S4

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Date: 23-04-2023

Word count: 451

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Gitlink

<https://git.fhict.nl/I490692/s4-depth-lucas-jacobs.git>

Explanation action- and observation space

Action space is defined as the range of options we have after witnessing the evidence for potential actions, decisions, or claims. (AWS DeepRacer action space and reward function).

Observation space can be described as the framework and acceptable standards for observing the state of the environment. For various environments, the observation can be different things. (Kathuria, A)

Classic control: Mountain Car Continuous

Action Space

Given is the following: `Box(-1.0, 1.0, (1,), float32)`. Action space is a Box space with a range of -1.0 to 1.0. The agent can choose an action in this range to interact with the environment. For this particular example, there are three actions: steering (0, -1 is full left, 1 is full right), 1 gas, 2: breaking.

Observation Space

The observation space is specified as followed: `Box([-1.2 -0.07], [0.6 0.07], (2,), float32)`. This means that the lower bound of [-1.2, -0.07] and an upper bound of [0.6, 0.07]. Furthermore, these values provide the agent with information about the current state of the environment.

Box2D: Car Racing

Action Space

The following is given: `Box([-1.0 0.0], 1.0, (3,), float32)`. This means that the lower bound is set to [-1.0, 0, 0] and an upper bound of [1.0, 1.0, 1.0]. It means that the agent can perform three actions with three continuous values between -1.0 and 1.0.

Observation Space

This is specified as: `Box(0, 255, (96, 96, 3), uint8)`. This has the values (96, 96, 3), which means that it is 3-dimensional space. This represents an RGB image of 96 X 96, with a value range of 0, to 255. Where the values (96, 96) represent the width and height, and (3) represent the color pallet (RGB: red, green, and blue).

Toy Text: Blackjack

Action Space

Action space is given as followed: `Discrete(2)`. There are two discrete actions with a range of [0, 1]. Where 0 means Stick to your current cards, 1 hit where you will draw a card.

Observation Space

The observation is showed as followed: `Tuple(Discrete(32), Discrete(11), Discrete(2))`. This tuple has 3 different values: current sum, values of the dealer's one-showing card, and whether a user holds a usable ace.

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