

SYSC5103 Assignment 2 - Question 1

Option Chosen: Planner with 6 operators

Choice reasoning: The reasoning behind choosing planner is to have a step wise approach to solve a deductive reasoning problem.

Inputs used: The agent uses two inputs ball and goal of the type ObjectInfo.

Code Explanation:

The program works in two parts

1. Get the sequence of operators from STRIP approach:
Here the agent is given an overview of the environment for which the agent has to decide a sequence of operations (i.e., a sequential group of different actions) that it will carry out in the future without knowing the complete future environment for his actions.
2. For each operation perform the appropriate actions to complete the steps:
Now the agent performs the sequence of actions in each operation and gets the exact environment input to fine tune its actions to reach the goal.

If working correctly the agent should choose one of the following sequence of operations:

- LookForAll -> AlignTowardsBall -> MoveTowardsBall -> KickBall ->
- LookForBall -> AlignTowardsBall -> MoveTowardsBall -> KickBall -> ...
- LookForGoal -> AlignTowardsBall -> MoveTowardsBall -> KickBall -> ...

Note: The agent may choose some random operation to do in the middle of the above sequence, but the overall flow will be one of the above.

Expected output:

Goal wff:

$(\exists \text{ theta } \exists \text{ d}) [\text{KickBall}(\text{ball}) \wedge \text{unknown}(\text{ball}) \wedge \text{goalD}(\text{d}) \wedge \text{goalTheta}(\text{theta})]$

The goal here for the agent is find a sequence of operations that will lead it to know where the goal is while the agent kicks the ball.

Code Execution: Same as Krizlet.

Note:

The [GitHub](#) link will provide additional information about the agent execution.

Operator Schema

LookForAll(ball, goal, d_b, d_g, theta_b, theta_g)

Precondition wff: unknown(ball) \wedge unknown(goal)

Delete List: unknown(ball), unknown(goal)

Add List: ballD(d_b), ballTheta(theta_b), goalD(d_g), goalTheta(theta_g)

LookForBall(ball, d_b, theta_b)

Precondition wff: unknown(ball)

Delete List: unknown(ball)

Add List: ballD(d_b), ballTheta(theta_b)

LookForGoal(goal, d_g, theta_g)

Precondition wff: unknown(goal)

Delete List: unknown(goal)

Add List: goalD(d_g), goalTheta(theta_g)

AlignTowardsBall(d_b, d_g, theta_b, theta_g)

Precondition wff: ballD(d_b) \wedge ballTheta(theta_b) \wedge goalD(d_g) \wedge goalTheta(theta_g)

Delete List: ballTheta(theta_b), goalD(d_g), goalTheta(theta_g)

Add List: ballTheta(0),

MoveTowardsBall(d_b)

Precondition wff: ballTheta(0)

Delete List: ballD(d_b)

Add List: ballD(0)

KickBall(ball)

Precondition wff: ballD(0) \wedge ballTheta(0)

Delete List: ballD(0), ballTheta(0)

Add List: unknown(ball), kicked(ball)