Tutorial 11 Goal-Oriented Behavior

Introduction

In this tutorial, you will gain better understanding about Goal-Oriented Behavior. Refer to Lecture 06 handout for completing this tutorial.

Task 1. Goal-Oriented Behavior

Consider a car racing game where the winning condition is when the car gets to the finish line.

(a) Assume that the goals and actions are modeled with the following insistence values in the range from 0 to 10:

Goal: Finish = 3
Goal: Fuel = 2
Action: Move-Forward (Finish -3; Fuel +2)
Action: Get-Fuel (Finish +1; Fuel -3)
Action: Gather-Powerup (Finish -2; Fuel +1)

Consider the discontentment as the sum of squares of insistence values, which action should be chosen? What is the corresponding discontentment value?

(b) Assume that timing is considered with the following model where the insistence values are in the range from 0 to 10:

Goal: Finish = 9
Goal: Fuel = 9 changing at +2 per minute
Goal: Fix = 9 changing at +1 per 2 minutes
Action: Move-Forward (Finish -3) 1 minute
Action: Get-Fuel (Finish +1; Fuel -2) 2 minutes
Action: Seek-Repair (Finish +2; Fix -4) 3 minutes

(i) Which action should be chosen next for minimizing the discontentment which is the sum of squares of insistence values?

(ii) Each of the following sequences of actions requires 3 minutes to complete. Which sequence(s) minimize(s) the discontentment, which is the sum of squares of insistence values at each time instant, at the end of 3 minutes?

A) Move-Forward, Move-Forward, Move-Forward
B) Get-Fuel, Move-Forward
C) Move-Forward, Get-Fuel
D) Seek-Repair

Task 2. Complete the Canvas Quiz

Complete the quiz “Tutorial 11” on the Canvas course page (Assignments > Tutorial 11) before the posted deadline.