Assignment 8

This due date for submitting this assignment has passed. As per our policy you must have submitted this assignment.

Due on 2019-09-25, 23:59 IST.

Course outline

How to access the portal

Week 1 - Assignment 8

1. Navigation and manipulation problems are researched to
   a. Adaptive and mobile robots, respectively
   b. Mobile real-world robotics, respectively

2. A navigation robot should have
   a. Adaptive control only
   b. Adaptive motion planner only
   c. Adaptive motion planner but not adaptive controller
   d. Both adaptive motion planner and adpative controller

3. A controlled environment model is applicable to
   a. Structured environments, respectively
   b. Structured and unstructured environments, respectively
   c. Unstructured environments only
   d. Unstructured environment only

4. Motion planning tasks to
   a. Drive a robot to a goal
   b. Drive a robot to a goal
   c. Determine collision-free path for the robot
   d. Ensure accurate position of robot at goal or obstacle

5. Which of the following statements in SL6 regarding Potential Field Approach
   a. It is ideal for determining collision-free path for a robot navigating among moving obstacles.
   b. It is a performance improvement of the visibility search
   c. There is a chance of this approach to get trapped to the local minimum positions particularly for a complex obstacle
   d. The robot may suffer from some reactivity mismatches by using this approach

6. Which of the following is the correct statement when a laptop is in power save mode?
   a. Nothing is happening in power save mode
   b. Nothing is happening in power save mode
   c. Nothing is happening in power save mode
   d. A process free from idle to idle is consuming power in background analysis of a laptop

7. Which of the following statements is in SE6?
   a. During walking, a robot is to be linear trajectory stable
   b. During walking, a robot is to be dynamically stable
   c. Maintaining balance of a legged robot is more difficult compared to a wheeled robot
   d. Both have been designed to handle on or off in any way but not just walking

8. Which of the following is the correct statement when a laptop is in power save mode?
   a. Nothing is happening in power save mode
   b. Nothing is happening in power save mode
   c. Nothing is happening in power save mode
   d. A process free from idle to idle is consuming power in background analysis of a laptop

9. Which of the following methods is used for solving motion planning problem among moving obstacles?
   a. Incremental planning
   b. Potential field approach
   c. Visibility graph
   d. Accessibility graph

10. Which of the following graph based methods is used for solving motion planning problem among moving obstacles?
    a. Visibility graph
    b. Visibility graph
    c. Visibility graph
    d. Accessibility graph

[10] Potential field approach can be used to solve
    a. Pathfinding problems only in robotics
    b. Dynamic motion planning problems only in robotics
    c. Both pathfinding and dynamic motion planning problems in robotics
    d. Matching field path for dynamic motion planning problem in robotics

Assignment Solutions

Low Section

Test Transcript

Answers:

Week 1:

1. a. Adaptive and mobile robots, respectively
   b. Mobile real-world robotics, respectively

2. a. Adaptive control only
   b. Adaptive motion planner only
   c. Adaptive motion planner but not adaptive controller
   d. Both adaptive motion planner and adaptive controller

3. a. Structured environments, respectively
   b. Structured and unstructured environments, respectively
   c. Unstructured environments only
   d. Unstructured environment only

4. a. Drive a robot to a goal
   b. Drive a robot to a goal
   c. Determine collision-free path for the robot
   d. Ensure accurate position of robot at goal or obstacle

5. a. It is ideal for determining collision-free path for a robot navigating among moving obstacles.
   b. It is a performance improvement of the visibility search
   c. There is a chance of this approach to get trapped to the local minimum positions particularly for a complex obstacle
   d. The robot may suffer from some reactivity mismatches by using this approach

6. a. Nothing is happening in power save mode
   b. Nothing is happening in power save mode
   c. Nothing is happening in power save mode
   d. A process free from idle to idle is consuming power in background analysis of a laptop

7. a. During walking, a robot is to be linear trajectory stable
   b. During walking, a robot is to be dynamically stable
   c. Maintaining balance of a legged robot is more difficult compared to a wheeled robot
   d. Both have been designed to handle on or off in any way but not just walking

8. a. Nothing is happening in power save mode
   b. Nothing is happening in power save mode
   c. Nothing is happening in power save mode
   d. A process free from idle to idle is consuming power in background analysis of a laptop

9. a. Incremental planning
   b. Potential field approach
   c. Visibility graph
   d. Accessibility graph

10. a. Visibility graph
    b. Visibility graph
    c. Visibility graph
    d. Accessibility graph

[10] Potential field approach can be used to solve
    a. Pathfinding problems only in robotics
    b. Dynamic motion planning problems only in robotics
    c. Both pathfinding and dynamic motion planning problems in robotics
    d. Matching field path for dynamic motion planning problem in robotics