

Unit 13 - Week 11

Course outline

How does an NPTEL online course work?

Pre Requisite

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Odometry Motion Model

Velocity Motion Model

Occupa Grid Mapping

Range Finder Measurement Model

Lecture materials

Quiz : Assignment 11

Introduction to robotics :Week 11 Feedback Form

Assignment 11 solutions

Week 12

Download Videos

Text Transcripts

Assignment 11

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-12-06, 23:59 IST.

Instructions: In the following questions, one or more choices may be correct. Select all that apply.

1) **Statement:** The velocity motion model assumes that the noise is Gaussian with zero mean and unit variance.

1 point

- True
 False

No, the answer is incorrect.

Score: 0

Accepted Answers:

False

2) Which of the following statements about motion models are **false**?

1 point

- Velocity motion models can be used for predicting the next state of the robot.
 Odometry motion models can be used for predicting the next state of the robot
 Odometry motion models can be used in recursive state estimation
 Velocity motion models can be used in recursive state estimation.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Odometry motion models can be used for predicting the next state of the robot

3) Assertion: Feature-based maps are more useful for localization.

1 point

Reason: They are not volumetric maps.

- Both Assertion and Reason are true, and Reason is correct explanation for Assertion
 Both Assertion and Reason are true, but Reason is not correct explanation for assertion
 Assertion is true and Reason is false
 Both Assertion and Reason are false

No, the answer is incorrect.

Score: 0

Accepted Answers:

Both Assertion and Reason are true, but Reason is not correct explanation for assertion

4) Which of the following are **true** about the occupancy grid estimation algorithm ?

2 points

- The algorithm is similar to the Binary Bayes filter with static state
 The occupancy of each cell is estimated independently
 The algorithms uses an inverse motion model.
 The algorithm uses an inverse measurement model
 The algorithm needs only the measurement information at each step

No, the answer is incorrect.

Score: 0

Accepted Answers:

The algorithm is similar to the Binary Bayes filter with static state

The occupancy of each cell is estimated independently

The algorithm uses an inverse measurement model

5) Consider the following two statements:

1 point

Statement1: Range-finder measurement models assume noise-free sensors. The errors are due to environmental factors.

Statement2: Range-finder measurement models are non-parametric models.

Which of the following are **true**?

- Both Statement1 and Statement2 are true
 Statement1 is true and Statement2 is false
 Statement1 is false and Statement2 is true
 Both Statement1 and Statement2 are false

No, the answer is incorrect.

Score: 0

Accepted Answers:

Both Statement1 and Statement2 are false

6) Which of the following is **not** a density function that is used in the range-finder model?

2 points

- Gaussian
 Exponential
 Uniform
 Poisson
 None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Poisson