

Quiz 3

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Multiple Choice

1.0/1.0 point (graded)

How can IoT help in robotics?

☒ Send processed data from the server

☒ Help in creating network of robots

☐ Help in powering the robot wirelessly

☒ Remotely commanding the robots

✓

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Multiple Choice

1.0/1.0 point (graded)

How can we implement computationally heavy algorithms in robots with low processing powers?

☒ implement the algorithm in a central server rather than on the robot

☒ use pre-trained models rather than running whole algorithms all the time

☐ increase the power input

✓

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Multiple Choice

1.0/1.0 point (graded)

Bolometer is a -

☐ Quantum Type PIR

☒ Thermal Type PIR

✓

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Multiple Choice

1.0/1.0 point (graded)

What is the difference between face detection and recognition?

☐ detection means to map a face with a name and recognition means to detect the presence of a face

☐ detection means to count the number of human faces and recognition means to identify whether the face is of a human or a photo

☒ recognition means to map a face with a name and detection means to detect the presence of a face

✓

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Multiple Choice

1.0/1.0 point (graded)

Suppose you are building the camera for an RC quadcopter that will capture still pictures road signs along the Gulshan-1 roundabout. The images will be used to train an NLP based model for reading sign boards.

What kind of camera should be ideal in this situation?

☐ rolling shutter camera with manual focus

☒ rolling shutter camera with auto focus

☐ global shutter camera with manual focus

☐ global shutter camera with auto focus

✓

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Multiple Choice

1.0/1.0 point (graded)

Suppose you are building a drone which can interact with customers and deliver items to it. If an image processing algorithm for face recognition and object detection is built-in the drone, what could be those algorithms? The algorithm should be able to identify people and object very fast.

☐ RNN

☒ YOLO

☐ DEEP ANN

☒ DEEPFACE

☐ R-CNN

✓

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Multiple Choice

1.0/1.0 point (graded)

"The CMOS sensor works faster than CCD sensor because it has much higher pixel count which helps in capturing large images at once" - This statement is-

☐ True

☒ False

☐ Depends on the camera

✓

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Checkboxes

1.0/1.0 point (graded)

Which of the following are part of a LiDAR system?

☐ Beam Converger

☒ IMU

☒ Photomultiplier

☒ GPS

☒ Mirrors

✓

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Multiple Choice

1.0/1.0 point (graded)

On which parameter does the number of released electrons depend in a CCD sensor?

☐ The amplification capability of the amplifiers used in CCD

☐ The size of the pixels

☒ The intensity of a scene captured in a pixel

☐ The power of the electron capturing electric fields

✓

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Multiple Choice

1.0/1.0 point (graded)

In pose-based visual servoing, the robot needs to compare between

☐ pose of the manipulator and pose of the object

☒ pose of the end-effector and pose of the object

☐ pose of the whole robot body and pose of the end-effector

✓

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Multiple Choice

1.0/1.0 point (graded)

HC-SR04 is a -

☒ 1D Range Finder

☐ 2D Range Finder

☐ 3D Range Finder

✓

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Multiple Choice

1.0/1.0 point (graded)

Suppose you are building an obstacle avoiding robot which can drive avoiding different objects after identifying them. What kind of object recognition task it would be?

☐ classification

☐ detection

☐ segmentation

☒ tagging

✓

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Multiple Choice

1.0/1.0 point (graded)

"In image based visual servoing, the difference between the current position of end effector and the current position of the object is determined using motion sensors." - the statement is-

☐ True

☒ False

✓

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Show Answer

Multiple Choice

1.0/1.0 point (graded)

For sensing purposes, LiDAR uses -

☐ infrared light

☐ sunlight

☒ laser

☐ sound wave

☐ ultrasonic pulse

✓

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Show Answer

Multiple Choice

1.0/1.0 point (graded)

Propagation delay in an ultrasonic sensor is-

☐ time between sending the trigger signal and receiving the reflected signal

☐ time between sending the trigger signal and receiving the accoustic signal

☐ time between start sending the accoustic signal and receiving the reflected signal

☒ time between finish sending the accoustic signal and receiving the reflected signal

☐ time between finish sending the trigger signal and start sending the accoustic signal

✓

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