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Grade	**36.67** out of 40.00 (**92**%)

Question **1**

Correct

Mark 5.00 out of 5.00

Which of the following are true regarding the difference camera calibration algorithms that were described in the class?

- [ ] a. Zhang's method that uses a moving plane will always result in worser calibration results compared to Tsai's method
- [ ] b. The 3D object based calibration can always create any set of 3D world points that the Tsai's method that can create a moving plane.
- [x] c. The vanishing point based calibration technique only requires the image coordinates of the three vanishing points and the world origin and does not require the actual world-coordinates of any of these points. ✔
- [x] d. One may use different techniques for estimating the intrinsic and extrinsic parameters and still get the correct calibration. ✔
- [x] e. Any of the calibration techniques can provide the camera matrix only unto a scale factor. ✔

Your answer is correct.

The correct answers are:
The vanishing point based calibration technique only requires the image coordinates of the three vanishing points and the world origin and does not require the actual world-coordinates of any of these points.,

Any of the calibration techniques can provide the camera matrix only unto a scale factor.,

One may use different techniques for estimating the intrinsic and extrinsic parameters and still get the correct calibration.

Question **2**

Correct

Mark 5.00 out of 5.00

You have two cameras that are 30 centimeters apart. The focal length of both cameras is 30 (in pixel units) and the disparity of an observed world point is 232 pixels. The distance to the world point in meters is:

- a. 30 * 0.3 / 232 ✔
- b. 30 / (30 * 232)
- c. 30 * 30 / 232
- d. None of the others
- e. 30 * 232 / 30

Your answer is correct.

The correct answer is: 30 * 0.3 / 232

Question **3**

Correct

Mark 5.00 out of 5.00

What is the minimum number of point correspondences you require to estimate the homography between two images with the same camera center?

Answer: 4 ✔

The correct answer is: 4

Question **4**

Correct

Mark 5.00 out of 5.00

Which of the following are true regarding bounding box detectors?

- [x] a. Focal loss tries to correct class imbalance in training data by assigning lower weight to easier samples. A HIGHER gamma implies less weightage to simpler samples. ✔
- [ ] b. Any object detection approach that uses a generic polygon is guaranteed to get a better IoU over one that uses rectangular bounding boxes as rectangles are a special case of a generic polygon.
- [x] c. Single-stage object detectors directly predict the bounding box location and dimensions from each part of the image, which may then be refined using a regression process ✔
- [ ] d. CNN based object detection using region proposals can be speeded up by using the convolutional layers after region proposal as features need to be extracted only for the proposed regions.

Your answer is correct.

The correct answers are:
Focal loss tries to correct class imbalance in training data by assigning lower weight to easier samples. A HIGHER gamma implies less weightage to simpler samples.,

Single-stage object detectors directly predict the bounding box location and dimensions from each part of the image, which may then be refined using a regression process

Question **5**

Correct

Mark 5.00 out of 5.00

In stereo configurations, the disparity between corresponding image points of a world point increases if: (select all choices that are correct)

- [ ] a. If the world point moves in a line parallel to the line connecting the camera centers.
- [x] b. The world point being imaged moves closer to the camera pair ✔
- [ ] c. The camera pair moves farther away from the world point being imaged.
- [x] d. The camera pair moves closer to the world point being imaged. ✔
- [ ] e. The world point being imaged moves farther away from the camera pair

Your answer is correct.

The correct answers are:
The world point being imaged moves closer to the camera pair,

The camera pair moves closer to the world point being imaged.

Question **6**

Partially correct

Mark 3.33 out of 5.00

Which of the following are correct regarding Grab-Cut segmentation?

- [x] a. It uses iterative application of graph-cut based segmentation, where the fore-ground and back-ground models are changed in each iteration ✔
- [ ] b. It works best for rectangular objects as the user-input for foreground is a rectangular regions
- [x] c. It is an essentially graph-cut based segmentation where the only difference lies in the user input of foreground and background regions. ✖
- [ ] d. None of the others
- [x] e. It uses a Gaussian Mixture Model in the pixel colour space for modelling foreground and background. ✔

Your answer is partially correct.

You have selected too many options.
The correct answers are:
It uses iterative application of graph-cut based segmentation, where the fore-ground and back-ground models are changed in each iteration,

It uses a Gaussian Mixture Model in the pixel colour space for modelling foreground and background.

Question **7**

Partially correct

Mark 3.33 out of 5.00

Which of the following are true regarding Semantic, Instance and Panoptic Segmentation

- [x] a. In all three segmentation problems, every pixel in the image is labelled as one of the object classes or instances. ✖
- [ ] b. None of the others
- [x] c. Feature learning for segmentation problem involves a tradeoff between location sensitivity for localisation of objects and location insensitivity for object labelling. ✔
- [x] d. Given a panoptic segmentation output, one directly convert it into a semantic segmentation or instance segmentation output. ✔
- [ ] e. Semantic segmentation is an easier task compared to object detection or object recognition
- [x] f. In instance segmentation, each instance of "things" or countable classes are labelled uniquely, while "stuff" in the image are not labelled ✔

Your answer is partially correct.

You have selected too many options.
The correct answers are:
In instance segmentation, each instance of "things" or countable classes are labelled uniquely, while "stuff" in the image are not labelled,

Feature learning for segmentation problem involves a tradeoff between location sensitivity for localisation of objects and location insensitivity for object labelling.,

Given a panoptic segmentation output, one directly convert it into a semantic segmentation or instance segmentation output.

Question **8**

Correct

Mark 5.00 out of 5.00

Which of the following statements are true about the Bag of Visual Words (BoVW) and VLAD representations of an image?

- [ ] a. The dimensionality (feature vector length) of BoVW representation of an image is the same as the dimensionality of the local feature representation used.
- [x] b. The dimensionality (feature vector length) of the BoVW is given by the vocabulary size ✔
- [x] c. The computation of Visual Words for BoVW and VLAD representations follow the same steps. ✔
- [x] d. The visual words are formed by clustering local feature representations from training data ✔
- [ ] e. None of the others
- [ ] f. During training, the BoVW represent each Visual Word as a scalar quantity, while VLAD represents them as vectors

Your answer is correct.

The correct answers are:
The visual words are formed by clustering local feature representations from training data,

The dimensionality (feature vector length) of the BoVW is given by the vocabulary size,

The computation of Visual Words for BoVW and VLAD representations follow the same steps.

◄ Quiz 2 (ODD)

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