

PRACTICE QUESTIONS

IABAC

Certified Computer Vision Expert

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EDITION	Free Set 1
QUESTIONS	10
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10 practice questions for the IABAC Certified Computer Vision Expert exam, each followed by its answer and a short explanation. More free sets and the full practice exam:

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1. Which color space separates luminance from chroma so that brightness-only operations can be applied without shifting hue?

- A RGB
- B YCbCr
- C CMYK
- D Bayer pattern

Answer: B

YCbCr stores one luma channel (Y) and two chroma-difference channels (Cb and Cr), so brightness can be processed separately. RGB mixes brightness and color in every channel, which is why it is the tempting distractor. CMYK is a print model and a Bayer pattern is a sensor color filter layout, so neither separates luminance.

2. The ratio of true positive detections to all predicted positives is called _____.

Answer: precision

Precision is true positives divided by true positives plus false positives. Recall uses actual positives in the denominator instead, which is the tempting alternative. Accuracy counts all correct decisions and is not the same ratio.

3. A dark, low-contrast photograph is processed with global histogram equalization. What is the primary effect?

- A It removes high-frequency sensor noise from the image, so faint texture is smoothed away before any further processing
- B It converts the image to a lower bit depth while leaving the contrast range of the original photograph unchanged
- C It spreads pixel intensities more evenly across the available range, increasing global contrast
- D It aligns the dominant edges of the scene to one fixed orientation so that later matching steps become simpler

Answer: C

Histogram equalization remaps intensities using the cumulative histogram, which flattens the distribution and widens contrast. Removing sensor noise is a job for smoothing filters, which is the tempting distractor here. Reducing bit depth lowers contrast resolution, and edge alignment is not a function of equalization.

4. Canny edge detection is a learned convolutional network that needs labeled edge maps for training.
- A True
 - B False

Answer: B (False)

Canny is a classical algorithm with fixed Gaussian smoothing, gradient computation, non-maximum suppression and hysteresis thresholds, and it has no learned weights. Learned edge detectors such as HED exist, which is why this is a tempting false statement. The Canny thresholds are chosen by hand or by tuning.

5. Which two statements about the Hough transform are correct? (Choose two.)
- A It requires color images and fails on grayscale input
 - B It is commonly used to detect straight lines and circles
 - C It is a deep network trained end to end with backpropagation
 - D It always outputs a pixel-level segmentation mask
 - E It detects lines by voting in a parameter space such as (rho, theta)

Answer: B, E

Each edge pixel votes for all lines through it in (rho, theta) space, and peaks reveal lines, with a similar scheme for circles. Requiring color is wrong, since the method works on edge maps, which makes it a tempting distractor. It is a classical voting method, not a trained network, and it produces parametric shapes rather than masks.

6. How many point correspondences are the minimum needed to estimate a planar homography with the direct linear transform?
- A Two
 - B Four
 - C Five
 - D Eight

Answer: B

A homography has eight degrees of freedom, and each point correspondence supplies two equations, so four non-degenerate matches are the minimum. Eight is the tempting distractor because the linear eight-point method estimates the fundamental matrix, not a homography. Two and five do not give a full-rank solution for a homography.

7. Which robust estimation technique is typically used to reject outlier feature matches when fitting a fundamental matrix?
- A k-means clustering
 - B Non-maximum suppression
 - C RANSAC
 - D Gaussian pyramid blending

Answer: C

RANSAC repeatedly fits a model to random minimal samples and keeps the model with the most inliers, which makes it robust to wrong matches. k-means is a clustering method and is the tempting distractor, but it does not reject matches under a geometric model. Non-maximum suppression and pyramid blending solve unrelated problems.

8. The sliding operation that multiplies a kernel with image patches and sums the products is called _____.

Answer: convolution (also accepted: 2D convolution)

In CNN practice the layer computes a sliding weighted sum, which is convolution in the framework sense. Pooling is a related sliding operation, but it has no learned kernel. Correlation is a close relative that appears in some frameworks.

9. A 3x3 convolution with stride 2 and padding 1 is applied to a 32x32 input. What is the spatial size of the output?
- A 16x16
 - B 15x15
 - C 31x31
 - D 8x8

Answer: A

The output size is $\text{floor}((32 + 2 \cdot 1 - 3) / 2) + 1$, which equals 16 in each dimension. The 15x15 answer is the tempting distractor, and it results from dropping the padding. The 31x31 result comes from stride 1, and 8x8 would need stride 4.

10. What is non-maximum suppression applied to after a detector produces many candidate boxes?
- A Raising the confidence score of every box by the same fixed amount, so that all candidates survive the final ranking
 - B Merging boxes of different classes into one combined box that covers the union of all the detections in the region
 - C Removing duplicate overlapping boxes for the same object, keeping the highest-scoring one
 - D Converting each anchor box into a polygon mask that follows the outline of the object in the image

Answer: C

NMS sorts boxes by score and drops any box whose IoU with a higher-scoring box exceeds a threshold, which removes duplicates. Adjusting scores uniformly would not change which boxes survive, which is the tempting distractor. Class merging and mask conversion are not part of NMS.