

Huawei

H13-321_V2.5

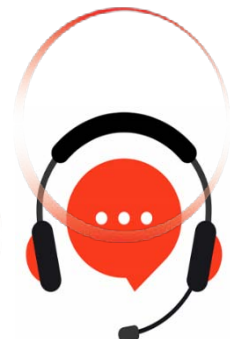
HCIP - AI EI Developer V2.5 Exam

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Question: 1

The mAP evaluation metric in object detection combines accuracy and recall.

- A. TRUE
- B. FALSE

Answer: B

Explanation:

The mAP (mean Average Precision) metric in object detection combines precision and recall, not accuracy and recall. mAP is calculated by averaging the Average Precision (AP) across all classes in a dataset. Precision measures how many predicted positives are correct, while recall measures how many actual positives are identified. Accuracy, on the other hand, is a general metric for classification tasks and is less suitable for object detection where class imbalance and localization are important.

Exact Extract from HCIP-AI EI Developer V2.5:

"mAP evaluates object detection performance by considering both precision and recall across all classes, providing a balanced measure of detection accuracy and completeness."

Question: 2

The accuracy of object location detection can be evaluated using the intersection over union (IoU) value, which is a ratio. The denominator is the overlapping area between the prediction bounding box and ground truth bounding box, and the numerator is the area of union encompassed by both boxes.

- A. TRUE
- B. FALSE

Answer: B

Explanation:

The IoU metric is defined as:

$$\text{IoU} = (\text{Area of Overlap}) / (\text{Area of Union})$$

Numerator: Area of overlap between the predicted bounding box and the ground truth bounding box.

Denominator: Area of union of both bounding boxes.

The statement given in the question reverses the numerator and denominator, which is why it is incorrect. IoU is crucial for object detection evaluation, and higher IoU values indicate better localization accuracy.

Exact Extract from HCIP-AI EI Developer V2.5:

"Intersection over Union (IoU) is calculated as the ratio of the intersection area between prediction and ground truth bounding boxes to their union area."

Question: 3

In an HSV color space, H is for hue, S is for saturation, and V is for value. Which of the following statements about the HSV color space are true?

- A. Saturation describes how vivid the color is. The lower the saturation, the closer the color is to gray. The higher the saturation, the more vivid the color.
- B. Hue indicates the basic color attributes, such as red, green, and blue.
- C. Value is a measure of brightness. The image brightness can be enhanced by processing the V component of the HSV color space.
- D. The HSV color space perceives colors differently from human eyes, so it is not suitable for image segmentation or color analysis.

Answer: A, B, C

Explanation:

The HSV model separates chromatic content (Hue, Saturation) from brightness (Value):

H (Hue): Defines the type of color (e.g., red, blue).

S (Saturation): Measures vividness — low S means muted colors, high S means vivid colors.

V (Value): Controls brightness — increasing V brightens the image. Contrary to option D, HSV aligns more closely with human perception than RGB, making it suitable for segmentation and color-based analysis.

Exact Extract from HCIP-AI EI Developer V2.5:

"HSV separates hue, saturation, and brightness, making it closer to human vision perception and suitable for color-based image analysis."

Question: 4

Which of the following methods are useful when tackling overfitting?

- A. Using dropout during model training
- B. Using more complex models
- C. Data augmentation
- D. Using parameter norm penalties

Answer: A, C, D

Explanation:

To address overfitting, HCIP-AI EI Developer V2.5 outlines multiple strategies:

Dropout: A regularization method that randomly ignores certain neurons during training, preventing reliance on specific paths and improving generalization.

Data augmentation: Expands the training dataset by applying transformations (rotation, scaling, flipping) to existing data, increasing diversity and reducing overfitting risk.

Parameter norm penalties: Techniques such as L1 and L2 regularization add a penalty to large parameter values, discouraging overly complex models.

Using a more complex model (Option B) is the opposite of what is recommended, as it generally increases the risk of overfitting.

Exact Extract from HCIP-AI EI Developer V2.5:

"Common overfitting mitigation techniques include data augmentation to expand datasets, dropout to randomly deactivate neurons during training, and applying regularization penalties to constrain model complexity."

Question: 5

Vision transformer (ViT) performs well in image classification tasks. Which of the following is the main advantage of ViT?

- A. It can handle small datasets with minimal labeling required.
- B. It achieves fast convergence without using pre-trained models.
- C. It can process high-resolution images to enhance classification accuracy.
- D. The self-attention mechanism is used to capture global features of images, improving classification accuracy.

Answer: D

Explanation:

The Vision Transformer (ViT) applies the transformer architecture to image patches. Its key advantage is the use of self-attention to capture global dependencies and relationships between all parts of an image. This allows ViT to excel in classification accuracy, especially on large datasets with sufficient pre-training.

Exact Extract from HCIP-AI EI Developer V2.5:

"ViT applies self-attention to image patches, enabling global feature extraction and improving classification performance compared to local receptive fields in CNNs."

Question: 6

Which of the following are the impacts of the development of large models?

- A. Model pre-training costs will be reduced
- B. Large models will completely replace small and domain-specific models
- C. The accuracy and efficiency of natural language processing tasks will improve
- D. Data privacy and security issues will be exacerbated

Answer: C, D

Explanation:

The emergence of large AI models (e.g., GPT, Pangu, BERT) has led to:

C: Improved accuracy and efficiency in NLP and other AI tasks because of their ability to capture deep semantic and contextual information.

D: Increased data privacy and security concerns, as large models require massive datasets which may contain sensitive or proprietary information. A is false — large models increase pre-training costs. B is

false — small and domain-specific models still play important roles due to efficiency and deployment constraints.

Exact Extract from HCIP-AI EI Developer V2.5:

"Large models improve task performance but raise privacy and security concerns. They do not necessarily reduce training cost or eliminate the need for smaller models."

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