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Lesson Quiz

Answer the following questions to test your knowledge of the concepts and techniques taught in this lesson.

Question 1

1/1 point (graded)
The Viola-Jones Object Detection System achieves its speed from which of the following abilities? (Choose all that apply)

- ☑ It constructs cascades of weak classifiers/rejecters. ✔
- ☐ It only works for detecting faces.
- ☐ It quickly scales images to compare against its feature cascades.
- ☑ It quickly scales features to compare against images. ✔
- ☑ It caches in a summed area table, to allow quick generation of features. ✔
- ☐ It quickly generates an image pyramid.
- ☐ It uses sliding windows to search for objects in the image.

✔

Explanation

Viola-Jones uses a cached summed area table called the Integral Image. This allows quick calculation of features at different scales (sizes) and thus it avoids the need to generate an image pyramid. Furthermore, Viola-Jones uses a cascade of weak classifiers/fast rejecters, to avoid investing too much effort in ensuring that a patch contains the object in question.
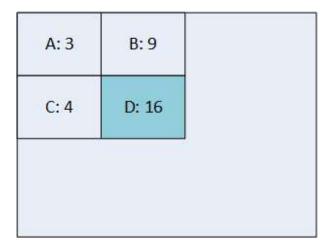
Submit	You have used 1 of 1 attempt

ℹ Answers are displayed within the problem

Question 2

1/1 point (graded)
Consider the following small Integral Image :

As we can see:

- the sum of pixel intensities under area A is 3, and it stores this in cell A in the table;

- the sum of pixel intensities under the area A+B is 9, and it stores this in cell B;

- the sum of pixel intensities under the area A+C is 4 and it stores this in cell C;

- the sum of pixel intensities under the area A+B+C+D is 16, and it stores this in cell D.

What is the value of pixel intensities just for the area 'D', shaded darker than the other cells?

⊙ 6 ✔

○ 9

○ 4

○ 3

○ 16

○ 7

Explanation

The value is equal to 16 - 9 - 4 + 3 = 6

Submit   You have used 1 of 1 attempt

ⓘ Answers are displayed within the problem

Question 3

1/1 point (graded)

In the following table of grayscale pixel intensities, calculate the missing integral image cell, knowing that

`s(x, y) = s(x, y-1) + i(x, y)`

and

`ii(x, y) = ii(x - 1, y) + s(x, y)`

where `s(x, y)` is the cumulative column sum and `s(x, -1) = 0` and `ii(-1, y) = 0`

0	6	7	4
4	9	3	5
1	8	12	7
11	6	2	4

➡

0	6	13	17
4	19	29	38
5		50	66
11	45	69	89

- ○ 4

- ○ 9

- ○ 29

- ◉ 28 ✔

- ○ 19

Explanation
The value is equal to 28 (0 + 4 + 1 + 6 + 9 + 8).

| Submit | You have used 1 of 1 attempt |

ⓘ Answers are displayed within the problem

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