Notebook 3 Quiz

Due Nov 18 at 5pm **Points** 5 **Questions** 5
Available Oct 5 at 5pm - Nov 18 at 5pm about 1 month **Time Limit** 60 Minutes
Allowed Attempts 2

Instructions

This quiz will review the topics presented in the exercises from the third notebook on feature keypoints, descriptors, and applications. The quiz is open book/notes/resources. You will have 60 minutes to complete the quiz.

Read the questions carefully. There are multiple variants of each question, and they may change slightly between each attempt.

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	60 minutes	3 out of 5

Correct answers are hidden.

Score for this attempt: **3** out of 5
Submitted Nov 14 at 6:49pm
This attempt took 60 minutes.

Incorrect

Question 1 0 / 1 pts

Use the arrays Ix and Iy shown below to calculate the value of R for the center pixel. Assume that the 3x3 weighting matrix $w(x, y) = 1$ for all x and y, and $\alpha = 0.05$. Recall:

$$M = \sum_x \sum_y w(x,y) \begin{bmatrix} I_x^2 & I_x I_y \\ I_x I_y & I_y^2 \end{bmatrix}$$

$$R = \det(M) - \alpha \operatorname{trace}^2(M)$$

```
Ix = [[0 1 1]
      [1 0 1]
      [0 1 0]]

Iy = [[0 1 0]
      [1 0 1]
      [1 1 0]]
```

Enter your answer to one decimal place accuracy, e.g., for a value of 3.14159 enter 3.1; for a value of 2 enter 2.0.

0.01

Incorrect

Question 2

0 / 1 pts

Given the 2x2 magnitude array and a 2x2 angle array (values in degrees) for a cell shown below, use 4 **unsigned** angle bins [0-45), [45-90), [90-135), and [135-180) as shown in the notebook to calculate the cell histogram.

```
Magnitudes:
[[ 9  2]
 [ 1  6]]

Angles:
[[  11  353]
 [ 131  271]]
```

What is the magnitude of the histogram for the [90-135) angle bin?

10

Question 3

1 / 1 pts

According to the HoG paper by Dalal & Triggs, which derivative masks work **best** for human recognition with HoG?

- uncentered (i.e., mask = [-1, 1])
- centered (i.e., mask = [-1, 0, 1])
- Sobel
- diagonal (i.e., mask = [[-1, 0], [0, 1]])

Question 4

1 / 1 pts

Given a 128x64 image window, calculate the size of the HoG feature vector that will be computed with 9 angle bins using a 3x3 block shape and 8x8 cell shape.

6,804

Question 5

1 / 1 pts

What is the default feature detector & descriptor used by OpenSfM?

- SIFT
- SURF
- ORB
- HoG
- HAHoG

Quiz Score: 3 out of 5