Started on	Monday, 1 February 2021, 2:07 PM
State	Finished
Completed on	Monday, 1 February 2021, 2:30 PM
Time taken	22 mins 41 secs
Grade	**5.00** out of 10.00 (**50**%)

Question **1**

Not answered

Marked out of 5.00

The physical location of two cameras are related as follows: Camera 2 is rotated by -45 degrees about Y axis (points in the world are rotated by +45 degrees) w.r.t camera1. Camera2 is then translated by 1 unit along x axis (points in the world move by -1 along x axis). The essential matrix for the camera pair is given by: e11 = [_____] ✘ , e12= [_____] ✘ , e13= [_____]

✘ , e21= [_____] ✘ , e22= [_____] ✘ , e23= [_____] ✘ , e31= [_____] ✘ , e32= [_____] ✘ , e33= [_____]

✘ .

Notes:

- If points in the world are first rotated and then translated, the resultant position is obtained by RX+T, where R is the rotation matrix and T is the translation vector.
- Sqrt(2) = 1.4142
- Sin(45) = Cos(45) = 1/sqrt(2) = 0.7071
- Write your matrices as exact numbers (e.g., 1/sqrt(2)) and finally convert to decimal.

Question **2**

Correct

Mark 3.00 out of 3.00

Select the most appropriate statement regarding epipolar constraint. If you see multiple correct answers, choose the most generic statement.

Notations and Assumptions:

1. The two images: Image1 and Image2 are of the same rigid world.
2. Line1 denotes a line on Image1 and Line2, that on Image2.
3. Point x1 lies in Image1 and x2 lies in Image2, where both are images of the same world point X.

- ○ a. For every point x1 in Image 1, there exists a pair of lines: Line1 passing through x1 and Line2 in Image2 such that; ✔
  every point on Line1 will have its corresponding point on Line2

- ○ b. For every line in Image1, there exists a line in Image2, where the point correspondences are constrained to.

- ○ c. None of the other statements are true

- ○ d. All the points in Image1 will map to a single line in Image2, where the corresponding points can be found.

- ○ e. For every point x1 in Image1, its correspondence has to lie on a specific line, Line2 in Image2

Your answer is correct.

The correct answer is:
For every point x1 in Image 1, there exists a pair of lines: Line1 passing through x1 and Line2 in Image2 such that; every point on Line1 will have its corresponding point on Line2

Question **3**

Correct

Mark 2.00 out of 2.00

Which of the following are true (possibly multiple statements are true):

- ☑ a. In a stereo pair, all epipolar lines of an image pass through a single point called an epipole ✔

- ☐ b. Epipolar constraint does not apply in the weakly calibrated case

- ☐ c. None of the others

- ☐ d. The epipolar lines can never be parallel

- ☑ e. Every epipolar lines in one image has a one-to-one correspondence with an epipolar line in the second image ✔

Your answer is correct.

The correct answers are: In a stereo pair, all epipolar lines of an image pass through a single point called an epipole, Every epipolar lines in one image has a one-to-one correspondence with an epipolar line in the second image

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