Course outline

How does an NPTEL online

Week 1: Introduction to

Concepts of Image

Week 2: Fundamental Concepts of Image

Week 3: Fundamental Concepts of Image

Lec 7 : Image Formation:

Stereo Vision Setup

Lec 10 : Image

Feedback Form

Lecture notes

Concepts

Concepts

Concepts

and Features

and Features

and Features

Machine Learning

Computer Vision

Computer Vision

Download videos

Text transcripts

Assignment Solutions

Live Sessions

of Projections - II

Quiz: Assignment 3

Week 4: Image Processing

Week 5: Image Processing

Week 6: Image Processing

Week 7: Image Descriptors

Week 8: Image Descriptors

Week 9:Image Descriptors

Week 10:Fundamentals of

Week 11:Applications of

Week 12: Applications of

Geometric Camera Model - III

Lec 8 : Image Formation in a

 Lec 9 : Image Reconstruction from a Series of Projections -I

Reconstruction from a Series

Formation

Formation

Formation

Computer Vision and Basic

NPTEL » Computer Vision and Image Processing - Fundamentals and Applications

Mentor

1 point

Assignment 3

The due date for submitting this assignment has passed.

Due on 2021-02-10, 23:59 IST.

course work? As per our records you have not submitted this assignment. Week 0 : Prerequisite

> The disparity gradient constraint that is often used in solving the stereo correspondence problem is _ Nearby image points should have correspondence that have similar disparity

Nearby image points should have correspondence that have dissimilar disparity

Image contents are uniformly scaled to a desirable size. Far image points should have correspondence that have dissimilar disparity

No. the answer is incorrect. Score: 0

Accepted Answers:

Nearby image points should have correspondence that have similar disparity

2) What is the biggest advantage of image rectification for stereo matching? 1 point Image contents are uniformly scaled to a desirable size.

All epipolar lines intersect at the vanishing point.

All epipolar lines are perfectly vertical.

 All epipolar lines are perfectly horizontal. Epipoles are moved to the center of the image.

No, the answer is incorrect. Score: 0

Accepted Answers: All epipolar lines are perfectly horizontal.

 Distance between Centre of projection (CP) and projection plane (PP) is finite Projectors are converging Distance between Centre of projection (CP) and projection plane (PP) is infinite

No. the answer is incorrect. Score: 0

Accepted Answers:

Distance between Centre of projection (CP) and projection plane (PP) is infinite

3) Which of the following is not a characteristic of perspective projection?

4) How is image formation in the eye different from that in a photographic camera 1 point

No difference

 Variable focal length Varying distance between lens and image plane

Fixed focal length

Projected image size is smaller than actual object

No, the answer is incorrect. Score: 0

Accepted Answers: Variable focal length

Projection plane is parallel to one of the principal axis. This is the characteristic of _

Axonometric projection

Orthographic projection

Orthographic Perspective

None of the above

No, the answer is incorrect. Score: 0

Accepted Answers: Orthographic projection

6) In which of the following scenarios can you use a weak perspective camera model for the target object?

A squirrel passing quickly in front of you.

An airplane flying at a very high attitude. The Hoover tower when you are taking a photo of it right in front of it.

A car beside you when you are driving.

No, the answer is incorrect. Score: 0

Accepted Answers: An airplane flying at a very high attitude.

7) Which of the following factor does not affect the intrinsic parameters of a camera model?

 Focal length Offset of optical center

Exposure

 Image resolution No, the answer is incorrect.

Score: 0 Accepted Answers:

Exposure

8) Find Radon transform $g(p, \theta)$ for $\rho = 3$ and $\theta = 0^{\circ}$ for the following function-

 $f(x, y) = \begin{cases} 2, x^2 + y^2 \le 25\\ 0, otherwise \end{cases}$

5

O 16 O 12

15 No, the answer is incorrect.

Score: 0

Accepted Answers: 16

The rotation matrix $R = \begin{bmatrix} 0.1 & 0.5 & 0.3 \\ 0.6 & 0.1 & 0.2 \\ 0.4 & 0.5 & 0.8 \end{bmatrix}$ and a translation vector t as $\begin{bmatrix} 10 \\ 20 \\ 30 \end{bmatrix}$. Given a point whose co-ordinate is [50,100,200] in

the world co-ordinate system, the value in camera co-ordinate system is

[136,120,200]

[112,80,74] [125,100,260]

[140,160,210]

No, the answer is incorrect. Score: 0

Accepted Answers:

[125,100,260]

10) Using Fourier slice theorem calculate $G(\omega, \theta)$ for $\omega = 0, \theta = 0^{\circ}$

1 point

$$f(x, y) = \begin{cases} A, x^2 + y^2 \le r^2 \\ 0, otherwise \end{cases}$$

$$A\int_{-\infty}^{\infty}\sqrt{r^2+\rho^2}d\rho$$

$$2A\int_{-\infty}^{\infty}\sqrt{r^2-\rho^2}d\rho$$

$$\begin{array}{c}
\bigcirc \\
2A \int_{-\infty}^{\infty} \sqrt{r^2 + \rho^2} d\rho
\end{array}$$

$$A \int_{-\infty}^{\infty} \sqrt{r^2 - \rho^2} d\rho$$

No, the answer is incorrect. Score: 0

Accepted Answers: $2A\int_{-\infty}^{\infty}\sqrt{r^2-\rho^2}d\rho$