

CSE152: Introduction to Computer Vision
Sample types of questions

Example Short Answer type questions:

Expected that you could answer in a few sentences.

1. (3 pts.) What type of filter would you use to remove impulse (salt and pepper) noise?

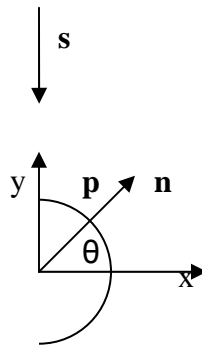
2. (4 pts.) Consider a real pinhole camera with an ideal diameter. Consider changing the diameter. As the diameter is increased, the image degrades. Likewise, when the diameter is shrunk, the image also degrades. Why is this?

3. (4 pts.) How is hysteresis thresholding used in the Canny Edge detector?

Examples longer answer type of question;

If necessary, explain your answer and assumption

1. (10pt.) Consider in 2-D the image of a Lambertian object under a distant light source. As shown below, let the object be half of a circle centered at (0,0). Let the light source direction be $\mathbf{s}=[0 \ 1]^t$. Note that the unit normal at a point \mathbf{p} on the circle can be written as $\mathbf{n}(\theta) = [\cos\theta \ \sin\theta]^t$ where θ is the angle between the x-axis and the ray from the origin to \mathbf{p} and in this case ranges from -90^0 to 90^0 . Let the albedo be given by $a(\theta) = \cos\theta$. Let the surface be observed by a camera from same direction as the light source direction



- a. Write an expression for the image intensity as a function of θ .
- b. For what value of θ is the intensity brightest?