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Assignment 8

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Edge detection is a set of methods that try to identify points in an image that its brightness changes sharply or in other words has discontinuities; the term for this discontinuity is an edge, hence the name edge detection. There are a few purposes for this detection and it’s because they usually correspond to discontinuities in depth and surface orientation, changes in material properties, and variations in scene illumination. A fantastic application of edge detection is when the canny method is used to draw the edges of photographs that result in image segmentation; this is done by detecting the edges and painting those particular pixels white while you paint the others black.

Another form of detection that has to do with processing images is blur detection, or the blurry classification problem, which is to try to classify whether an image is blurry without actually just looking at it. Blur detection is similar to edge detection, but there are far more ways to classify blurriness than there are to classify and edge and one of those ways just happens to be by using edge detection. One way to use edge detection to solve the blurry classification problem is to count the number of edges that are in an image, or rather several images and take that average, and if the image has hundreds of thousands of edges it’s likely sharp, anything under that usually means blurry.

Edge detection can have many uses from the amazingness of creating gradient images to the simple classification of a blurry image. It seems that in most cases a blurry image can be detected simply based off of the number of edges it contains. If an image has many edges it is likely to be a sharp image and if it has fewer edges it’s likely to be a blurry images, although this is not always the case it usually works to classify a sharp image versus a blurry image. As with every algorithm it does come with issues because there is such a wide range of number of edges a photograph can contain based off the size of it and the amount of objects in the photograph. The following table shows a little bit about that range and just about how many edges a blurry image has versus a sharp image.

|  |  |  |
| --- | --- | --- |
|  | Blurry | Sharp |
| 1 | 42657 | 86761 |
| 2 | 9815 | 125354 |
| 3 | 8396 | 70996 |
| 4 | 4478 | 114269 |
| 5 | 46434 | 273643 |
| 6 | 24844 | 148391 |
| 7 | 13542 | 312782 |
| 8 | 35503 | 900127 |
| 9 | 10454 | 620844 |
| 10 | 2107 | 563838 |
| Average | 21723 | 321701 |