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CSCI 431

Homework 7

Abstract

We use morphology to attempt to count the number of dice in an image and the number of dots on the face of the die.

Conclusion

To process the image, I first used the red channel in order to minimize the potential text from the 1 dot face of the die. Using this channel, I converted the image to black and white using imbinarize with a threshold of 0.7. This became an issue when it came to the shadowed images, since they were darker than the rest, causing the binarize to not convert as accurately. I resized the image in order to make the problem easier to deal with.

I used two structuring elements for the morphology. First, I used a square to close the die and isolate the general area of the die. Then, I used a circle to open the dots on the die. I did the two steps using two separate copies of the image and then used an and on the two to attempt to get rid of the noise in the background while keeping the dot information. From there, I used bwlabel to isolate each die, then used it again on the resulting region to try to count the number of dots on the die.

For the most part, this worked relatively well. The issues arose when there were other faces of the die showing. This would mess up the dot counting, since additional dots would show up. I tried to put these into the unknown category by limiting the dots that a face could potentially have.