Lab 04, Morphological Operations

João Santos, *MRSI, 76912*

Index Terms—**OpenCV, Computer Vision, MRSI, UA, DETI, LATEX.**

I. INTRODUCTION

THIS report is intended to be used alongside the Python3 code developed for this Lab.

The Lab #04 is a introduction class to morphological operations, OpenCV and Python 3.

This report was written using LATEX .

II. EXERCISES

Lets analyse the resolution of the proposed exercises.

A. Ex. 4.1: Dilation

For this exercise, we were required to apply a dilation to a given image (Fig. 1) and, then, analyse the differences between using different kernels and amount of iterations.

Figs. 2 and 3 show the effect when only applying the dilation once. The first obvious effect is that the outer bounds of the region get expanded, i.e. the region grows. Contrarily, the inner hole has shrunk because the bounds of the hole get "expanded" towards the black portion.

We can see that when using a circular kernel, the outer corners of the region get rounder compared to the base image and when using a rectangular kernel. Also, the inner hole gets a little less round with the rectangular kernel.
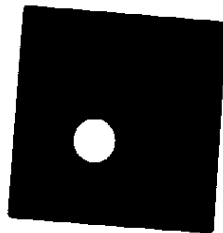

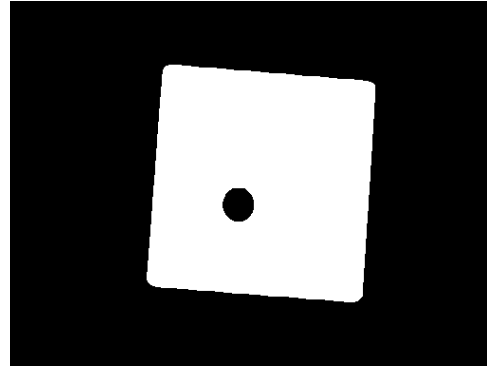Fig. 1. Base image for this exercise.

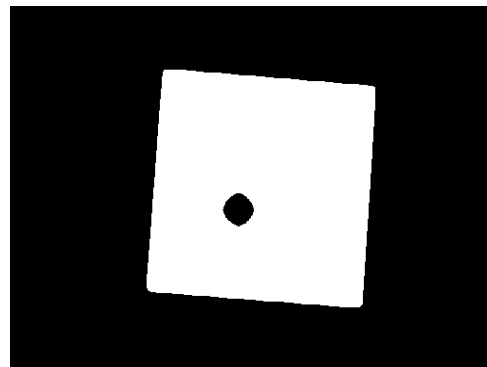Fig. 2. Dilation using a circle with radius 11.

Fig. 3. Dilation using a square with side 11.

If we apply those same kernels, to the same image, but ten times, the changes are much more dramatic. The outputs of this procedure are Figs. 4 and 5 we see the same tendency for the outer bounds but with increased effect. Also, notice on both images the hole as been closed on the region itself due to the successive dilations.
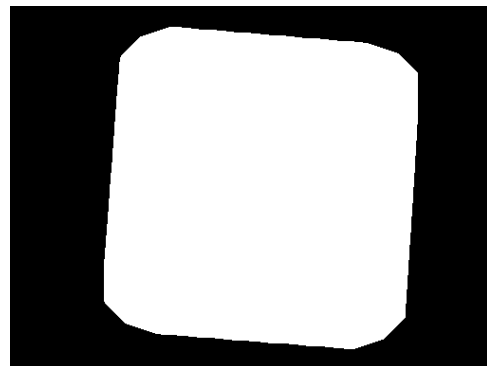

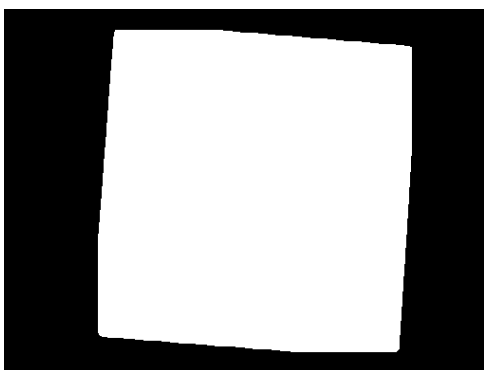Fig. 4. Dilation using a circle with radius 11 (using 10 iterations).

Fig. 5. Dilation using a square with side 11 (using 10 iterations).