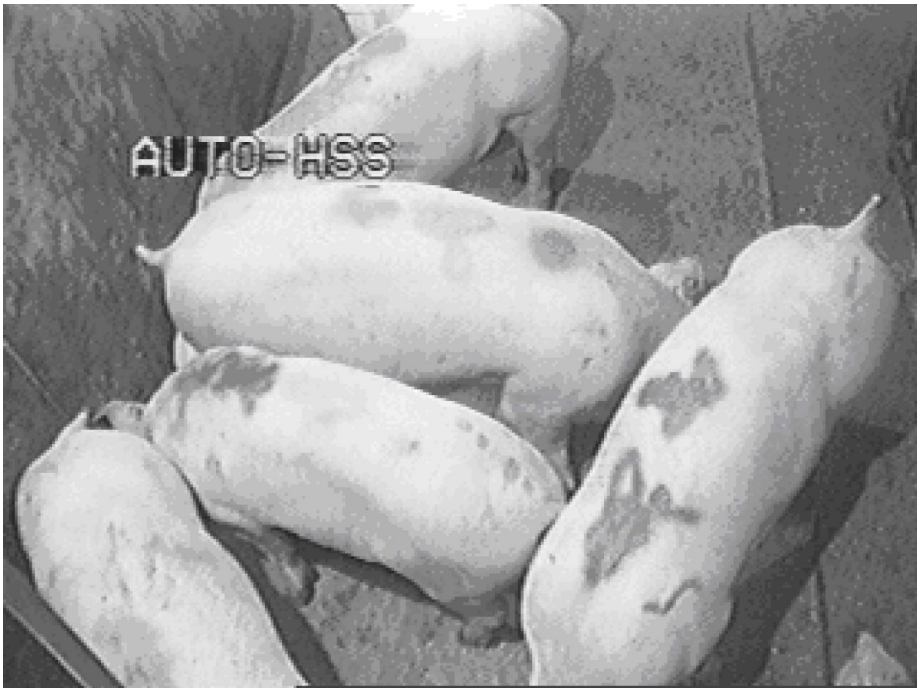
Tim Hung
CS 455 Assignment 4
Part B

Writeup



Given the orignal image, we are tasked with counting the number of pigs. To accomplish this, we will utilize various image processing techniques, specifically highlighting the utility of morphological operations.

First, we use our binary image thresholding algorithm that was written for assignment 1. The optimal threshold for this step seems to be around 200.

Next, we must implement several morphological operations: dilation, erosion, opening, and closing. Dilation and erosion are very similar, and opening and closing consist of running those two operations in succession but in different orders.

Here is the result after I “opened” the image using a 3x3 square structuring element. There wasn’t much precision in the selection of this shape, I had to try out a multitude of different shapes and sizes to find the best one.

Then, I “close” the image with the same 3x3 square structuring element to retrieve these 5 contiguous blobs that depict each pig.

Finally, I run my region detection function written for assignment 1 to count 5 pigs and their sizes.

```
Region 1 has 1707 pixels
Region 2 has 3493 pixels
Region 3 has 4192 pixels
Region 4 has 4600 pixels
Region 5 has 6653 pixels
Smallest region: 1707 |
Largest region: 6653
```