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CM1193

CSSE463

**Lab 4**

To increase the understanding of shape recognition, our task is to code the algorithm described in class and done by Matlab’s function, *regionprop*, and find the circularity of the identified objects in the image. The reason for students to tear apart a function that performs the functionality already is to engage the individual components that work behind the scenes. As computer scientist, examining the details of a function allows us to increase our understanding of tools and use the ideas in other areas.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Shape** | **Elongation** | **Circularity (C1)** | **Centroid** | **True Class** | **Detected Class** |
| 1 | 1.6326 | 19.3134 | (116.5972, 112.6514) | Rectangle | Rectangle |
| 2 | 1 | 15.7722 | (125, 293) | Square | Square |
| 3 | 1.0006 | 18.0202 | (168.5915, 456.655) | Square | Square |
| 4 | 1.0005 | 13.8334 | (236.5604, 588.6314) | Circle | Circle |
| 5 | 5.4314 | 30.2414 | (449, 65) | Rectangle | Ellipses |
| 6 | 2.897 | 20.8023 | (377, 269) | Rectangle | Rectangle |
| 7 | 1.6739 | 16.9151 | (484.5043, 496.9989) | Rectangle | Rectangle |
| 8 | 3.3498 | 22.347 | (580.5692, 608.6421) | Ellipses | Ellipses |
| 9 | 2.717 | 19.4859 | (796.5547, 88.6193) | Ellipses | Ellipses |
| 10 | 1.0065 | 13.5577 | (708.5767, 180.6469) | Circle | Circle |
| 11 | 1.8601 | 15.9813 | (800.6075, 360.6639) | Ellipses | Ellipses |
| 12 | 1.7334 | 15.4711 | (812.5827, 592.6496) | Ellipses | Ellipses |

**Table 1:** Results of algorithm that detects the shape.



**Fig 1:** Shapes with the perimeter drawn by our algorithm.