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**Section:**  *5’2*

Using MATLAB to Measure the Diameter of an Object within an Image

*%%Import Image*

*Clear;*

*clc;*

*obj= imread(‘ball.jpg’);*

*imshow(obj)*

*%%Segment Image*

*%%Divide image "obj" into its respective RGB intensities*

*red=obj(:,:,1);*

*Green=obj(:,:,2);*

*blue=obj(:,:,3);*

*figure (1)*

*subplot (2,2, 1); imshow (obj); title ‘(Original Image’);*

*subplot (2,2, 2); imshow (red); title (‘Red Plane’);*

*subplot (2,2, 3); imshow (green); title (‘Green Plane’);*

*subplot (2,2, 4); imshow (blue); title (‘Blue Plane’);*

*% Threshold the blue plane*

*Figure(2)*

*Level=0.37;*

*Bw2=im2bw(blue,level);*

subplot (2,2,1); imshow (bw2); title(‘ Blue plane threholder’);

*%%Remove Noise*

*%Fill any holes*

*fill = imfill (bw2, 'holes’);*

*subplot (2,2,2); imshow (fill); title (‘Holes filled’ )*

*%Remove any blobs on the border of the image*

*Clear= imclearborder (fill);*

*subplot (2,2,3); imshow (clear); title('Remove blobs on border');*

*%Remove blobs that are smaller than 7 pixels across*

*se=strel(‘disk’,7);*

*open =imopen (fill,se);*

*subplot (2,2, 4); imshow (open);title(‘Remove email blobs’);*

*%% Measure Object Diameter*

*Diameter=regionprops (open, 'MajoAxiaLength')*

*%Show result*

*figure (3)*

*imshow (obj)*

*d=imdistline;% Include a line to physically measure the ball*

Results The diameter is now displayed in the Command Window to be approx. 170 pixels across. This was verified in Figure 9 by using the imdistline function in line 50 (Figure 8). As you can see between the two figures, the value calculated by the code was very close to the manual measurement in Figure 9.

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