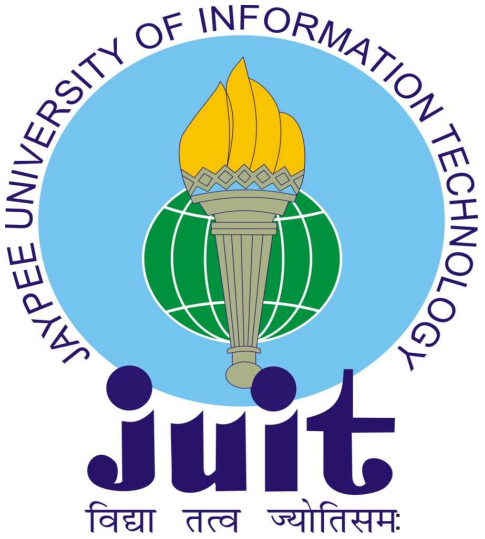

PROJECT REPORT

IT Workshop Lab (18B17CI372)

Faculty: Dr. Alok Kumar

Made By:

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Saksham Singh Salathia (211444)

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CERTIFICATE

This is to certify that –

a) Akshit Sharma
b) Niharika
c) Saksham Singh Salathia
d) Aditya Gupta,

students of CS-34 , have successfully completed the IT – Workshop Lab (MATLAB) Project – ‘Measuring diameter of an object within an image’ , using MATLAB under the guidance of Dr. Alok Kumar during the academic session 2022-23 in partial fulfilment of IT Workshop Lab Practical Examination.

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Dr. Alok Kumar

INTRODUCTION

In this project, we use MATLAB (Matrix Laboratory) and its Image Processing Toolbox (and its functions) in order to determine diameter of an object in a given image and give that as output. We chose this project because it is often that we find ourselves in a spot where we need to extract data from an image, be it text, or sometimes, measure something within an image.

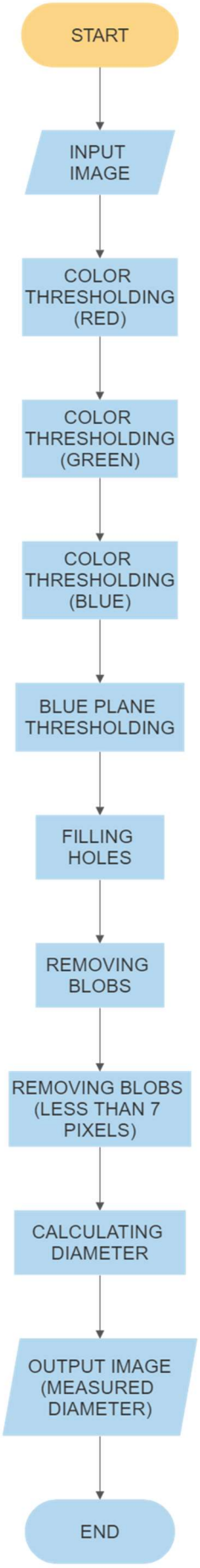
METHODOLOGY

We start with importing an image to our workspace using the `imread` function of the image processing toolbox. Then, we segment the image into its RGB segments. We then threshold the blue plane, and remove any noise that is present in the image, and remove any blobs that are smaller than 7 pixels. Then, we measure the object diameter (in pixels) and use the `regionprops` function of the toolbox, and then show the result on the image.

OBJECTIVE

To measure diameter of a given object in an image.

FLOW CHART


START
INPUT IMAGE
COLOR THRESHOLDING (RED)
COLOR THRESHOLDING (GREEN)
COLOR THRESHOLDING (BLUE)
BLUE PLANE THRESHOLDING
FILLING HOLES
REMOVING BLOBS
REMOVING BLOBS (LESS THAN 7 PIXELS)
CALCULATING DIAMETER
OUTPUT IMAGE (MEASURED DIAMETER)
END

SOURCE CODE

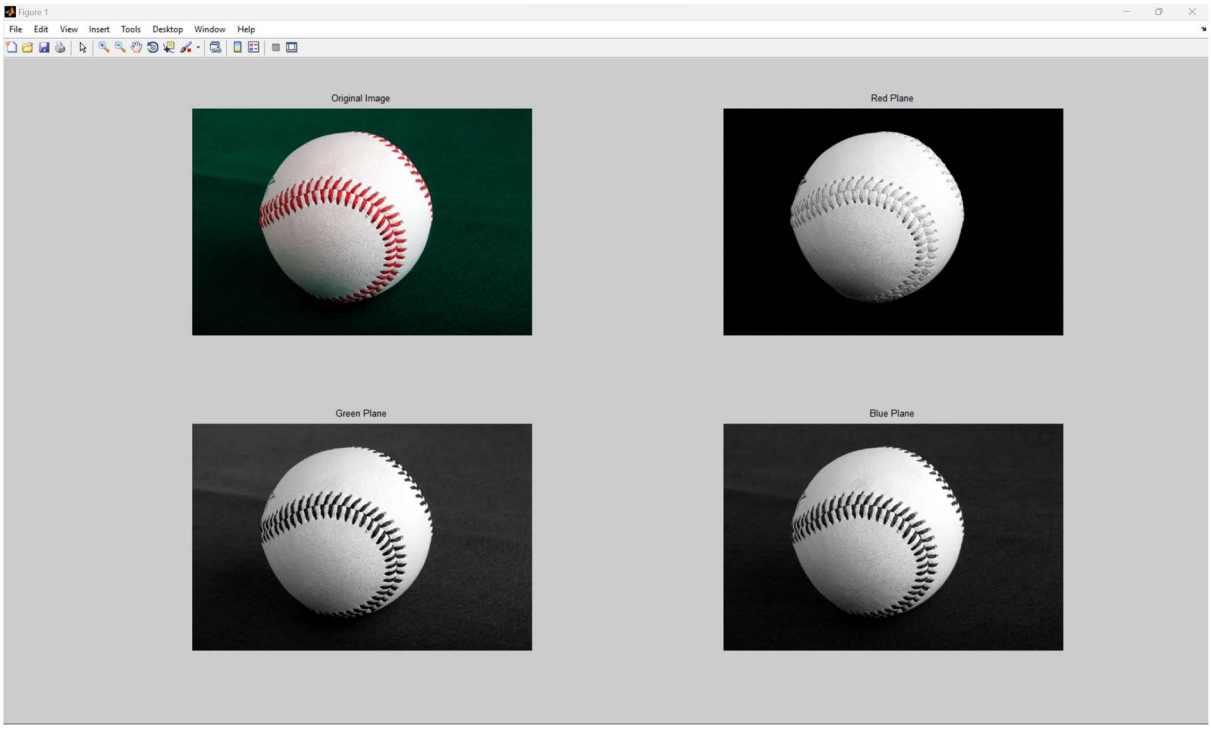
```
clc;
clear all;

%IMPORTING IMAGE
imported_image=imread('D:\Coding
Files\University\2022 ODD SEM\MATLAB\Baseball.jpg');
imshow(imported_image);

%SEGMENT IMAGE
%Dividing image into respective RGB in intenstites

redseg=imported_image(:,:,1);
blueseg=imported_image(:,:,3);
greenseg=imported_image(:,:,2);

figure(1)
subplot(2,2,1);
imshow(imported_image);
title('Original Image');
subplot(2,2,2);
imshow(redseg);
title('Red Plane');
subplot(2,2,3);
imshow(greenseg);
title('Green Plane');
subplot(2,2,4);
imshow(blueseg);
title('Blue Plane');


%threshold blue plane
figure(2)
level=0.37;
bw2=im2bw(blueseg,level);
subplot(2,2,1);
imshow(bw2);
title('Blue threshold');

%NOISE REMOVING
```

```
%Filling holes
fill=imfill(bw2,'holes');
subplot(2,2,2);
imshow(fill)
title('No holes');

%Removing blobs on the border of mage
blob=imclearborder(fill);
subplot(2,2,3);
imshow(blob);
title('Blobs removed');

%Removing blobs less than 7 pixel
spb=strel('disk',7);
open=imopen(fill,spb);
subplot(2,2,4);
imshow(open);
title('No small blob');

%OBJECT DIAMETER
dm=regionprops(open,'MajorAxisLength');

%RESULT
figure(3)
imshow(imported_image)
d=imdistline;
```

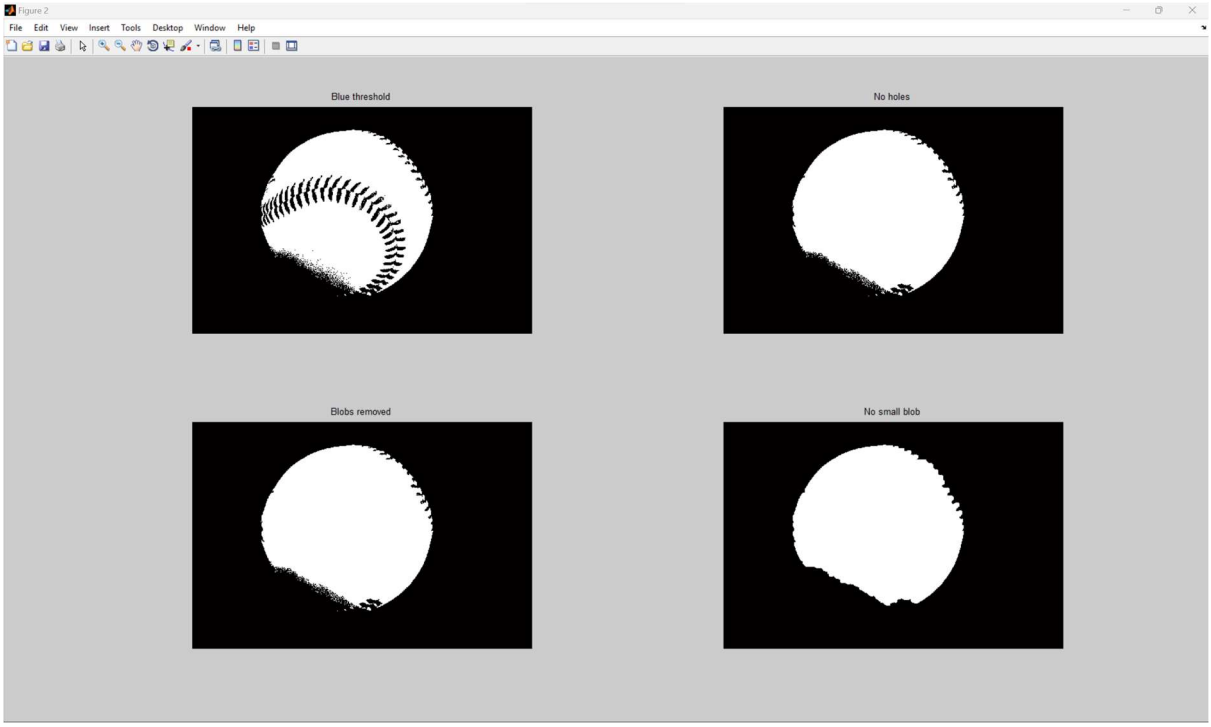
OUTPUTS

Image used as input:

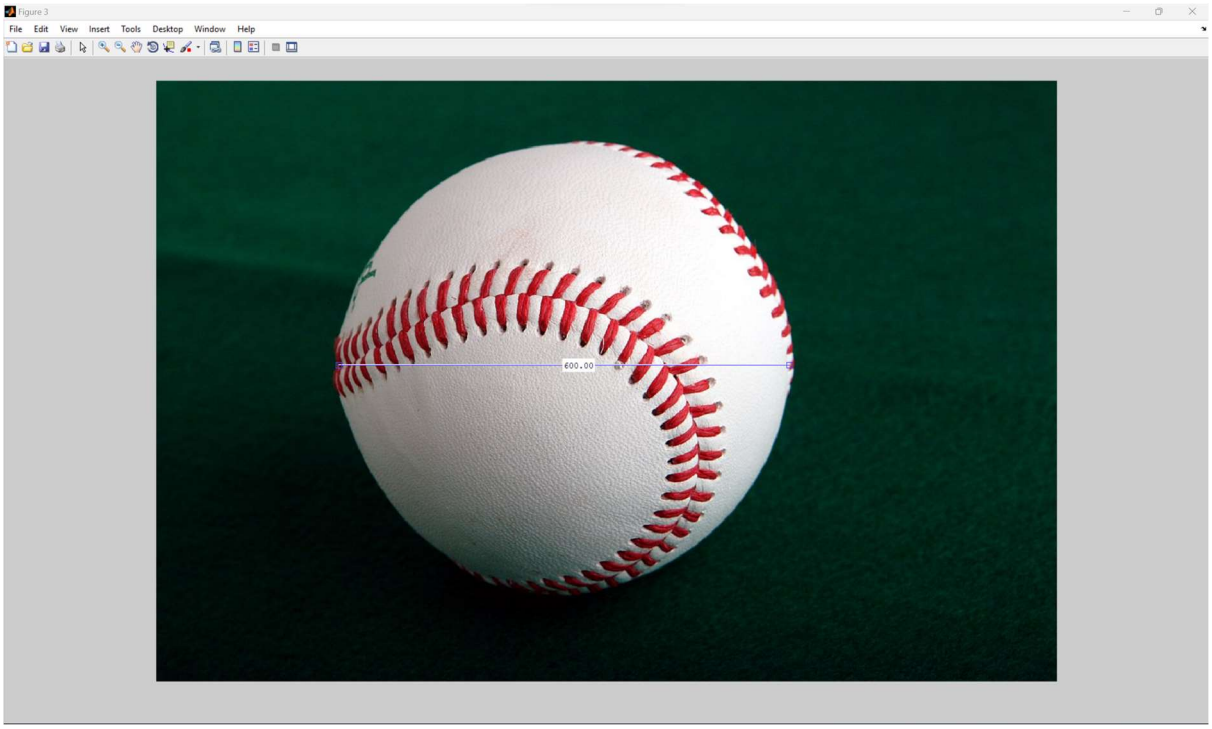
RGB Segmented Output:



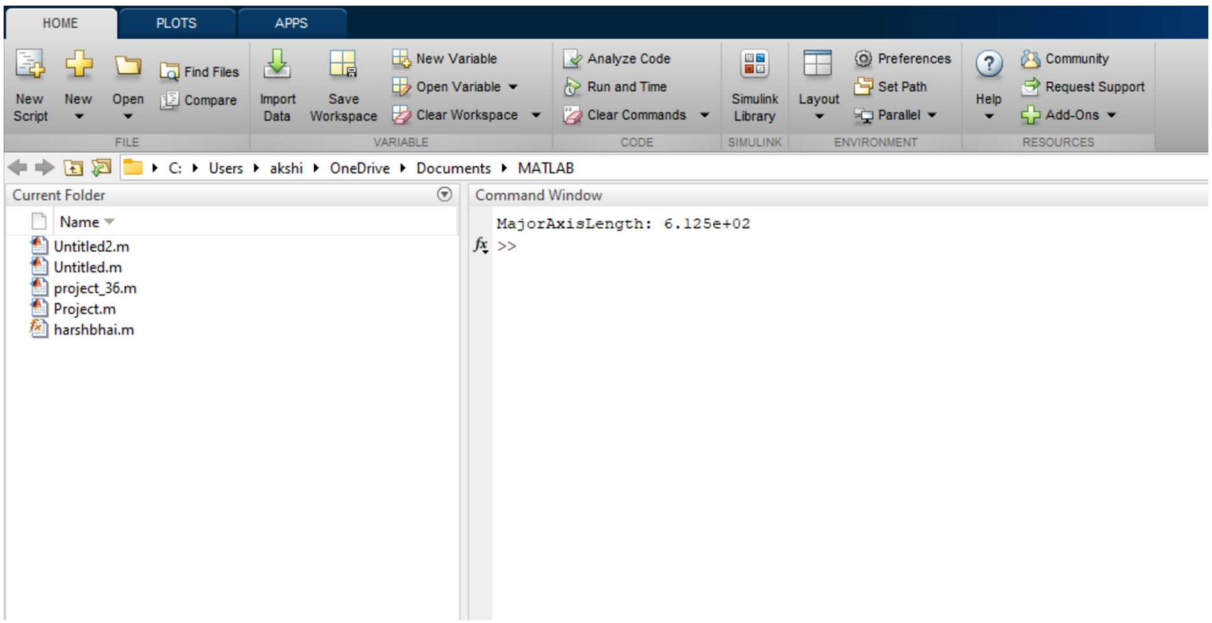
Removing Noise:



Final Output:



Conclusion:



Hence, we get the desired length.