National University
of computer and emerging sciences

Object Measurement Application

Using numerous image processing techniques e.g Contouring, Edge-Detection , Filtering etc.

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Submitted to
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Course: Digital Image Processing

Project Description

An application to measure any object in real time using numerous digital image processing techniques, like canny edge detection, dilation, erosion, filtering, contouring.The application will be using A4 paper as the guide and will measure the width and height of objects placed in the region.

Features from Project Proposal

● Detect Different Types of Objects
● Automatically Measure the Objects in the region
● Measurements Shown on Object with its Units
● High Speed and Accuracy
● Allow the user to save the measurement results to a file for later analysis.
● Implement a zoom feature to allow the user to zoom in and out of the image.
● Allow the user to crop the image to focus on a specific area of interest.
● Provide an option to display the image in grayscale or in color.
● Implement a feature to compare multiple images side by side.
● Provide a histogram of pixel intensities to help the user understand the distribution of
pixel values in the image.
● Implement a feature to rotate the image to a desired angle.
● Allow the user to adjust the brightness and contrast of the image.
● Implement a feature to convert the image to different file formats.
● Provide a simple tutorial or documentation to guide the user through the application
● Friendly UI

Features Done (10)

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Working

I am using OpenCV to read Image then convert it to Grayscale then apply Gaussian Blur on it then do Edge Detection using Canny Edge Detector (40-80 Threshold) then again blurring then I am applying binary threshold, I am doing Erosion to remove all the noises then I am finding max contours then I am doing dilation then I am drawing a bounding box and then I am measuring the bounding box and writing the measurement on the Image.

My application is made on Reactjs , my server is deployed on Nodejs and my Image processing script is written in Python.

Software Used

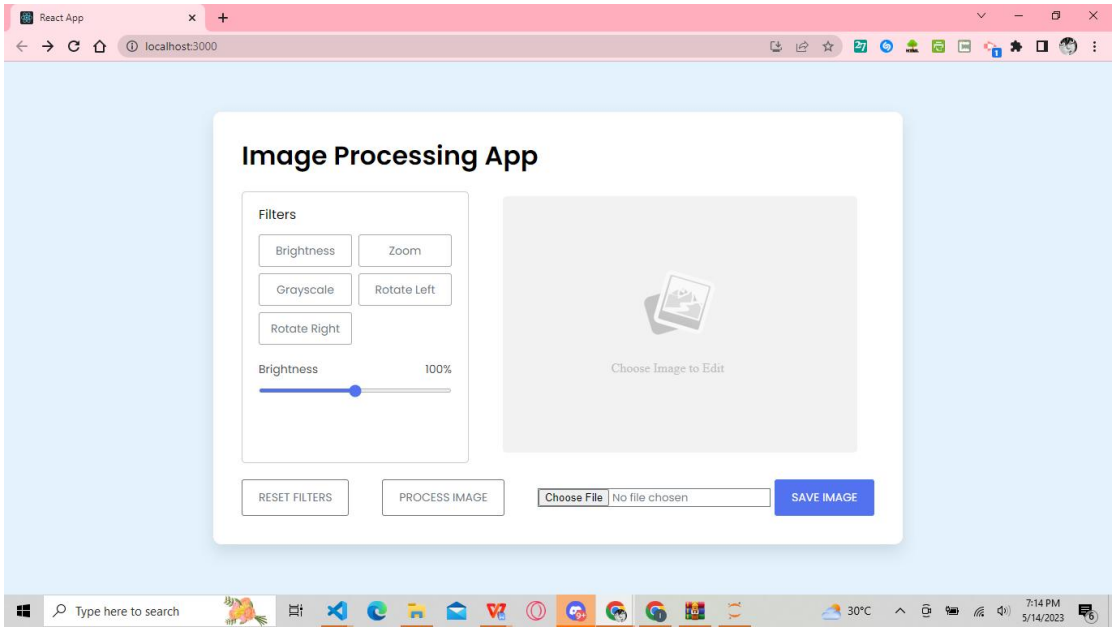
OpenCV
Numpy
Python
Reactjs
Nodejs

Inputs / Output

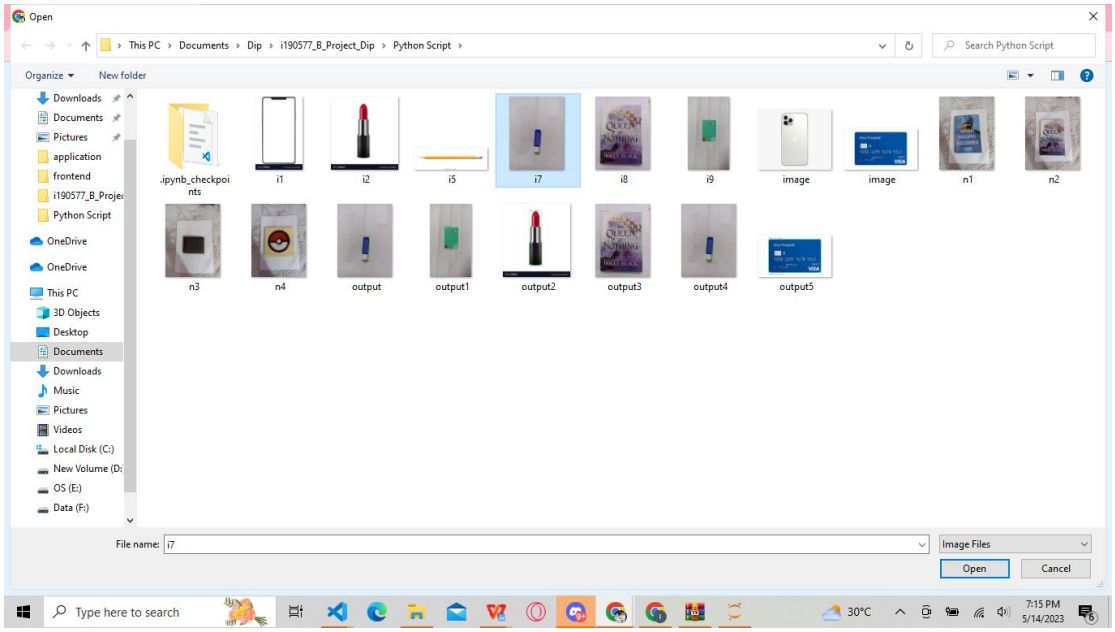
Input: Objects placed on the A4 paper
Output: Objects' measurement in the defined units.

Screenshots

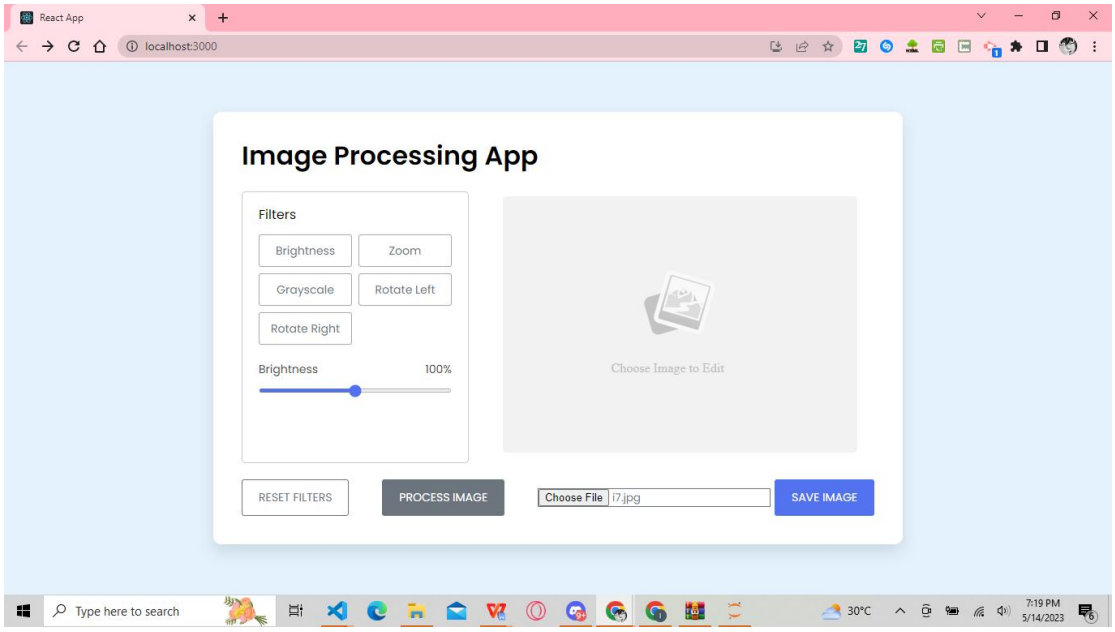
Front Page



Selecting Image



Processing Image



Different Options to do with the Image after Processing

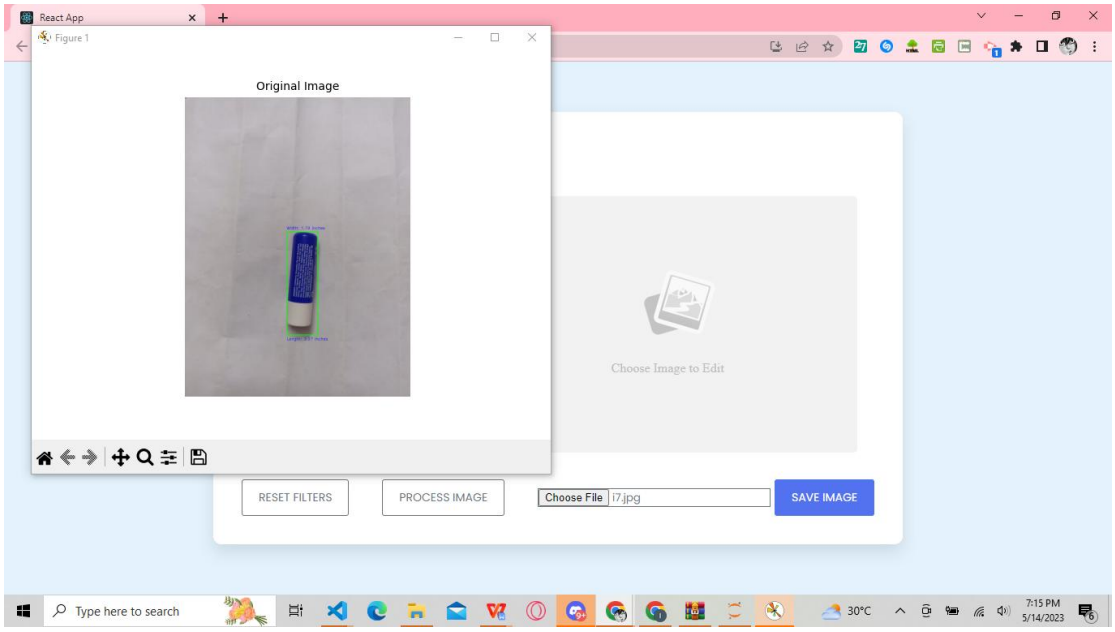
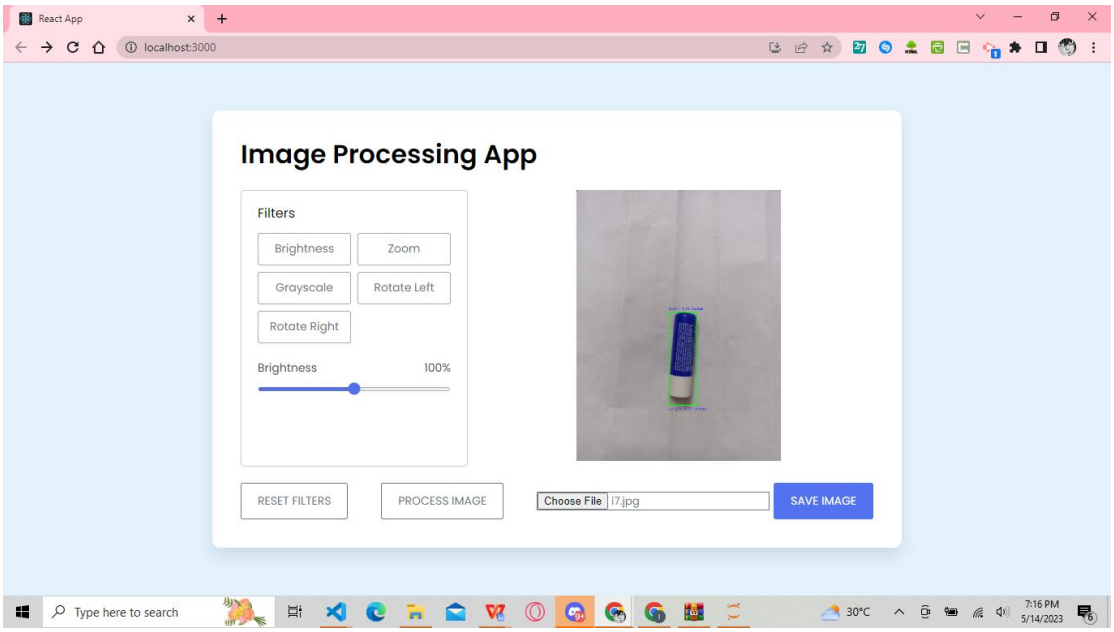
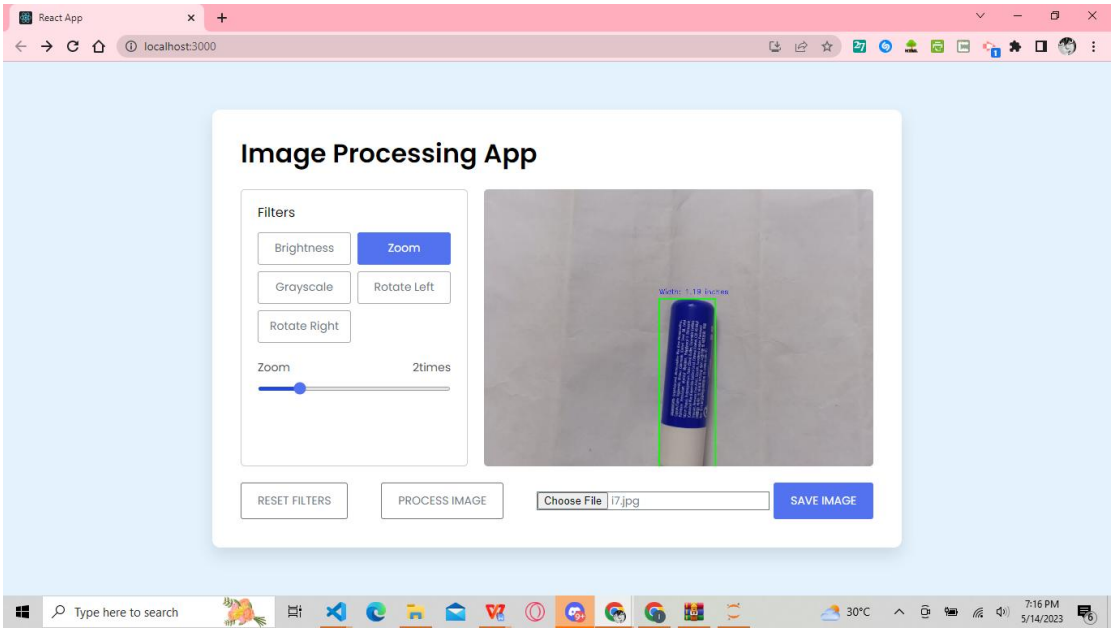


Image on web to use the filters

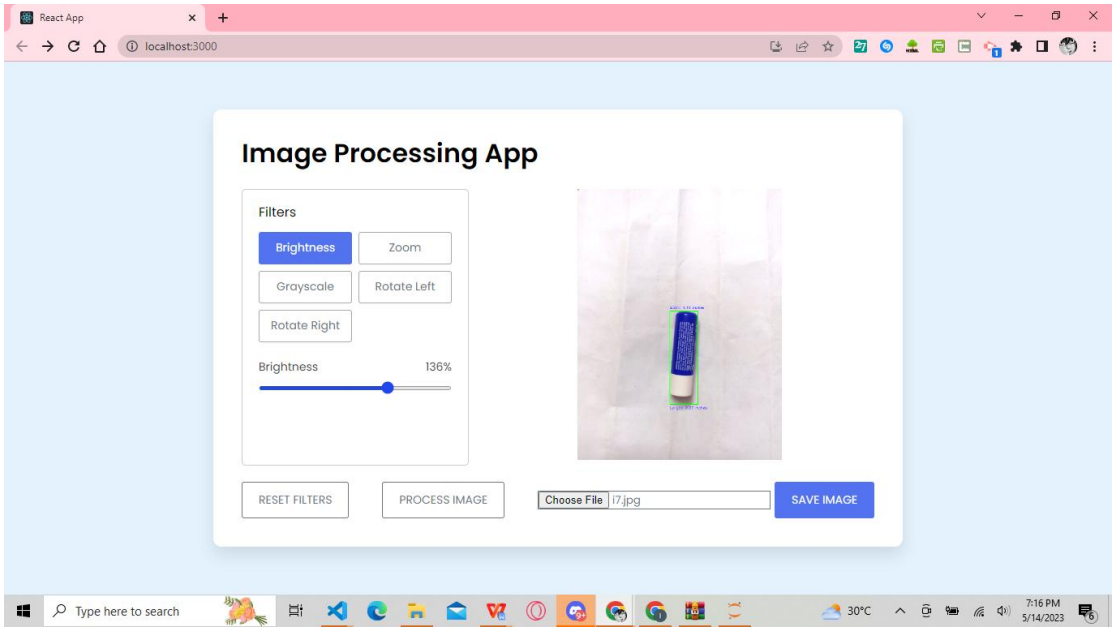


Using the filters

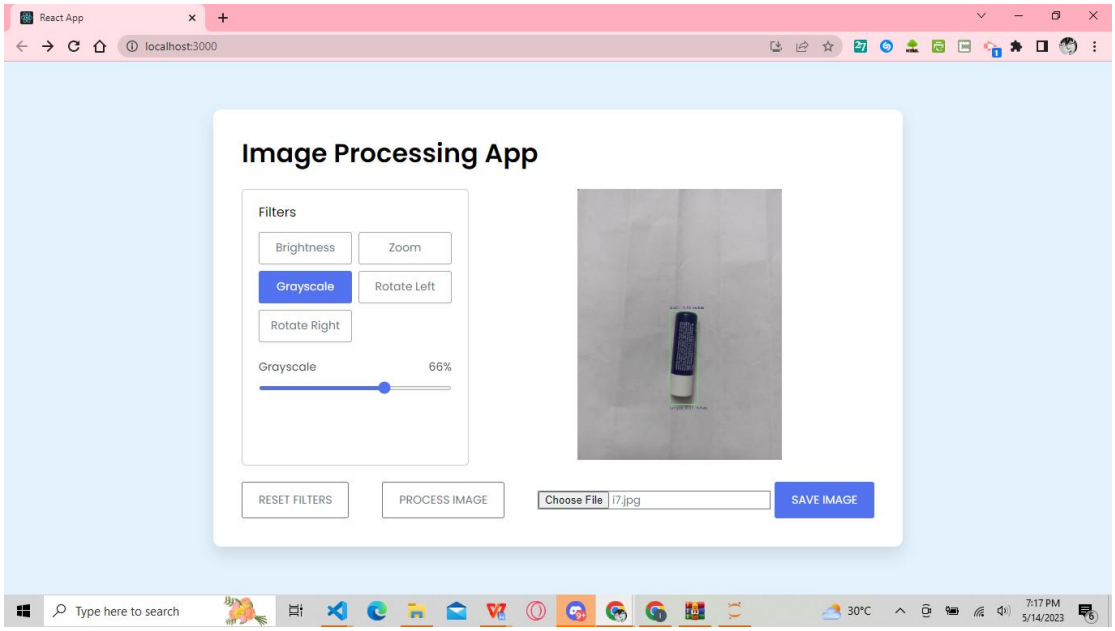
Zoom



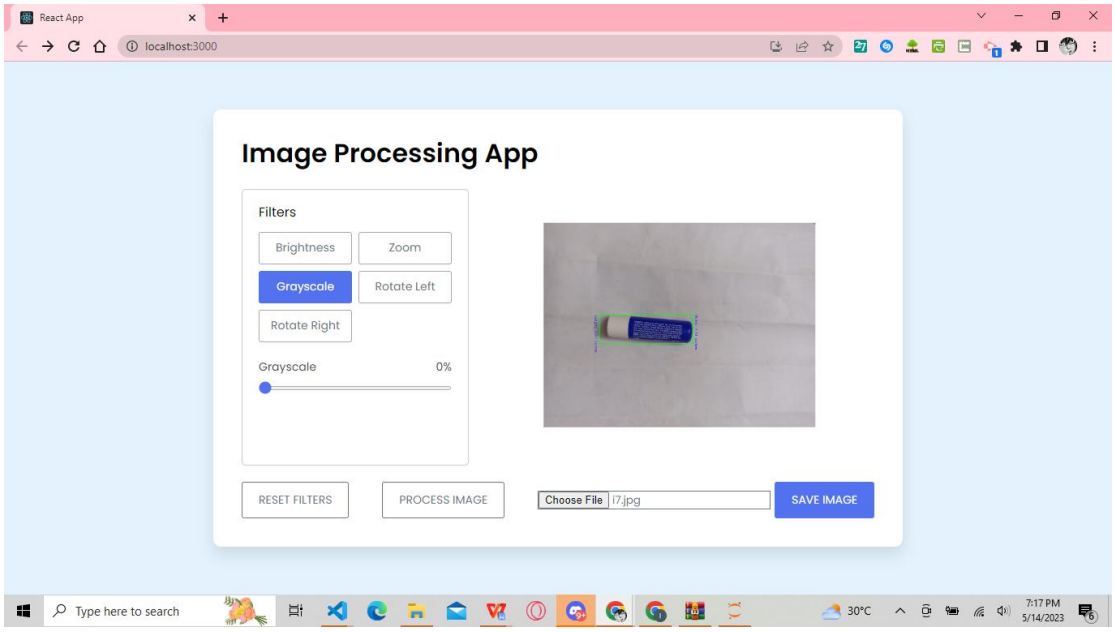
Brightness



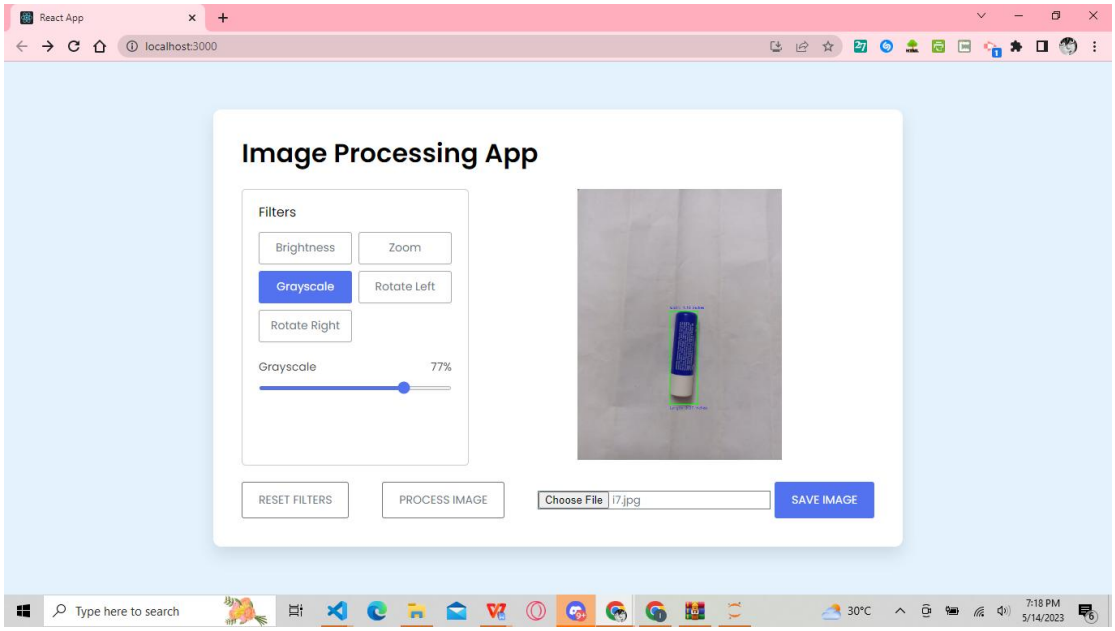
Grayscale



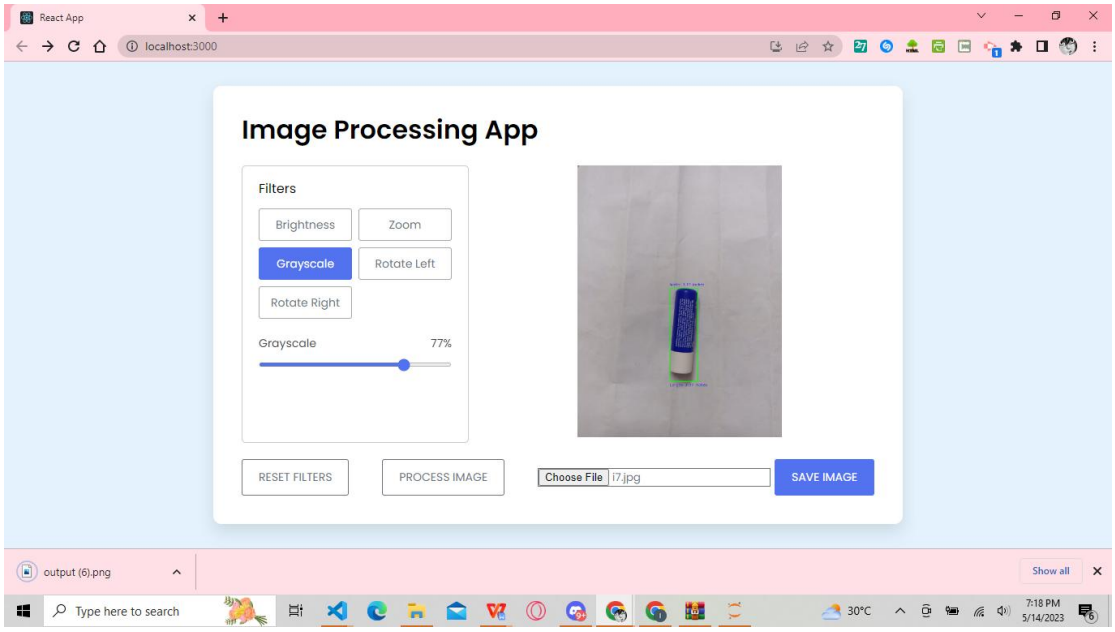
Rotation



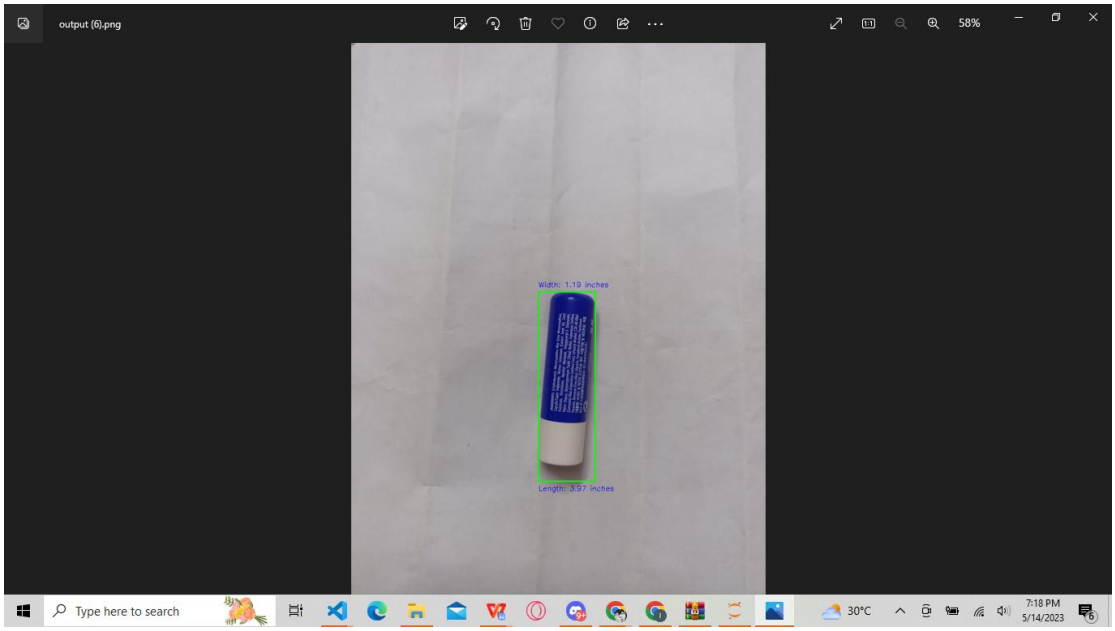
Reset



Download


React App
localhost:3000
Image Processing App
Filters
Brightness
Zoom
Grayscale
Rotate Left
Rotate Right
Grayscale
77%
RESET FILTERS
PROCESS IMAGE
Choose File
I7.jpg
SAVE IMAGE
output (6).png
Show all
Type here to search
30°C
7:18 PM
5/14/2023

Image


output (6).png
58%
Width: 1.19 inches
Length: 3.97 inches
Type here to search
30°C
7:18 PM
5/14/2023

Deployment and Running

first inside parent folder do

- npm install

then inside backend folder do

- npm install

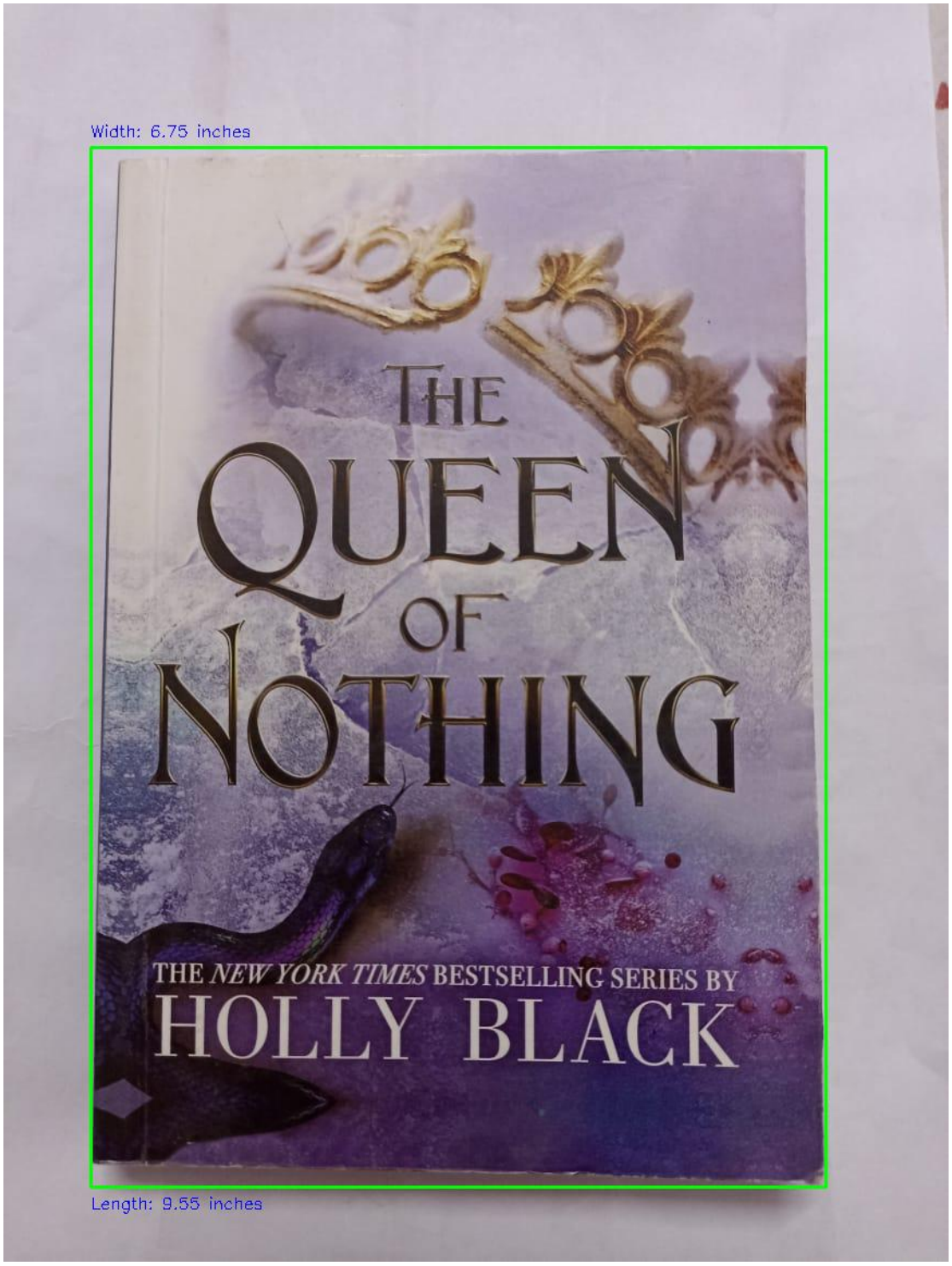
then go to backend and run the server

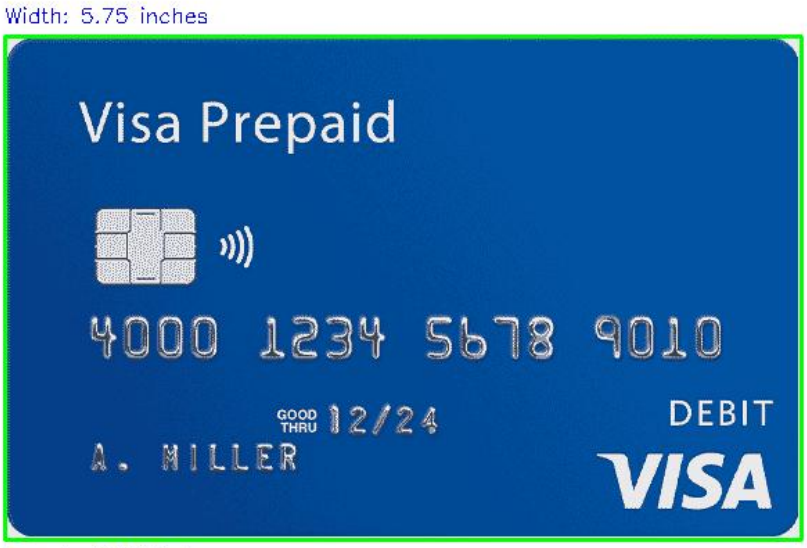
- node index.js

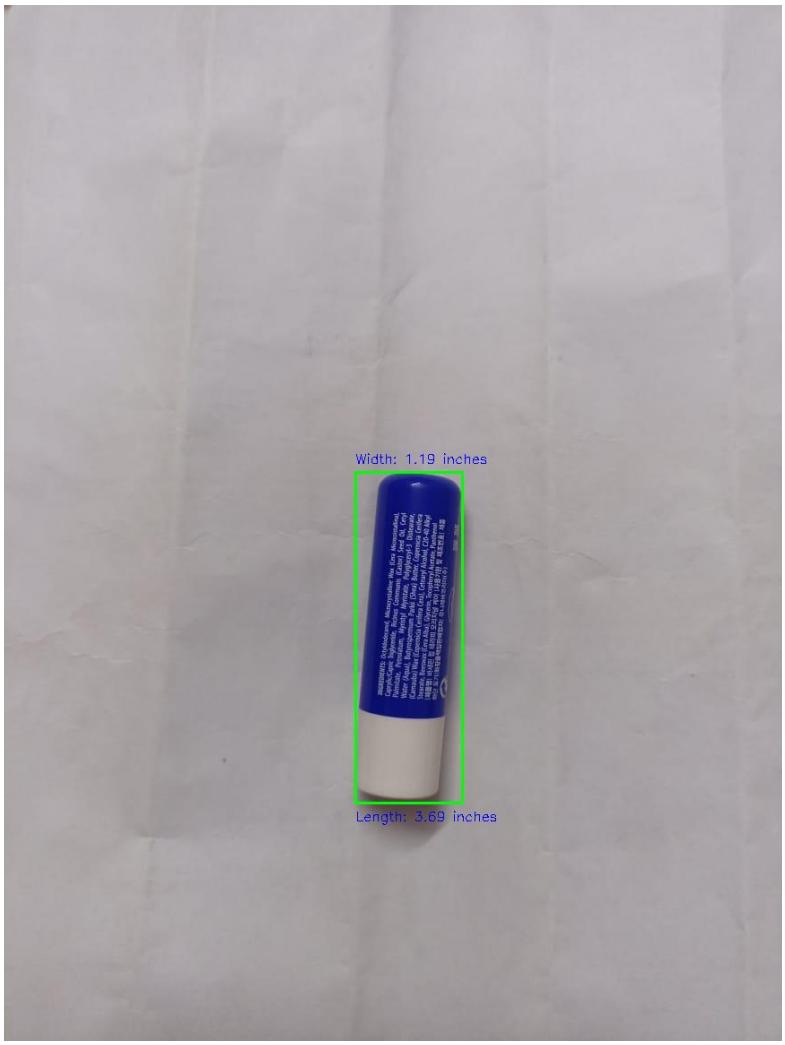
then run the application (parent folder)

- npm start

Some Sample Testing Outputs




Width: 5.75 inches
Visa Prepaid
4000 1234 5678 9010
GOOD THRU 12/24
A. MILLER
DEBIT
VISA
Length: 3.63 inches


Width: 1.19 inches
Length: 3.69 inches