SoI (Size of Objects in an Image)

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Abstract— Object identification and sizing of objects in these days is an important concern from many sectors of industry. This is a vitally important computer vision problem. This research introduces an improved technique to identify artifacts from the video streams and calculate their measurements in quick time. Using OpenCV, scipy, numphy and imuitls libraries we proposed an object measurement technique for images[15].Size of Object in an Image is a project which is made for the recognition of size of objects within an image. Being able to automatically recognize size of objects in an image it will help us to do image processing. It provides facility to users to measure size of objects in an image in their respected measuring units.

Keywords: Image Processing, Object detection, object dimension measurement, Open CV

I. INTRODUCTION

Object detection and measuring systems are very critical tasks for industrial processes. Object detection is commonly used in industry during product quality phases. The programproposed could apply to an industrial quality control program. It can also be used for various production structures, or for health purposes. In general, it definesobjects in the public area and tests their measurements.

Size of Object in an Image is all about a website which is dedicated to help users to users by providing a facility to measure size of objects. Measuring the size of objects in an image is similar to computing the distance from our camera to an object in both cases, we need to define a ratio that measures the number of pixels per a given metric. I call thisthe "pixels per metric" ratio, which I have more formally defined in the following project[8]. User have to upload its respective image in our web application and within few seconds size ofobjects present within that image is measured by keeping left most object as a reference object. It measures pixel of leftmost object and keeping it an areference it is going to measure all others object with the help of that reference size. We have used open source computer vision library.

The reference object always is the left-most object in the image. Also, to calibrate your pixels per metric variable, the reference object can be utilized and from there, calculate the size of other objects in all frames.

II. LITERATURE SURVEY

Although there are some websites those who are performing same task of calculating size of objects within an image but all those websites has some flaws in it. SoI (Size of Objects in an Image) is a platform which removes all that drawbacks of other websites and provides a free service to needy users. Some websites are paid or having free trial for some time period only whereas some website is not efficient in providing accurate results. There are some websites which are not that user friendly and take lot of time to Calculate or measure size of objects in an image which user uploads. Thus after reading number of systems and working upon them we came to a conclusion and thus created a system which removes all those drawbacks from all existing systems. We have searched and read three android based applications which includes "Partometer", "The Ruler" and "Smart Measure".Partometer is an easy to use and handy tool for object dimensions measurement that can be used as a ruler or tape measure or replace them in certain situations[7]. Ruler application is an android application whichbasically turns your smartphone into a smart ruler. You can set the units to either centimetre, millimetre, inch and more[6].Smart Measure application is an android application that is a measuring app that mostly uses the main camera of your smartphone. The camera then lets the app gauge the distance of an object and the height of that object[5].

III. OBJECT DETECTION AND WORKING

Firstly, we need to pre-process our picture in the proposed framework. Our program processes an image and converts the image to a gray scale to improve speed and precision. Objects are detected using Open CV(objdetect module). Either one object or several objects are identified with it. The transformed picture will be processed with the help of Numpy(a special library of python used for image processing).After image processing objects are detected and separated[5] . after processing and detection measurement of objects is performed with the help of Scipy(a library in python used for measurement of objects).

Fig. 1: Use Case Diagram

To summarize object measurement briefly, we detect contours after edge detection and close any gaps between edges by using a cv2.findContours OpenCV feature to find the shapes of the objects in the edge map. Contours are positioned from left to right.[4] The reference object in the picture is the left one permanently We calibrate the Frame and set parameter value, depending on the reference object[15]. Next we search every contour, continue looping over every single contour. Before that, they can draw the rectangle around objects in green. So, in a small purple circle, the points of the bounding box rectangle draw. We can get midpoints after that, since the bounding box is ordered. Finally, we measure pixels per Metric variable by relying on the point of reference. The height-distance in pixels is set to the variable hD (height), and the width-distance is set to the variable wD (width). Then, we measured the Euclidean distance between center point sets.

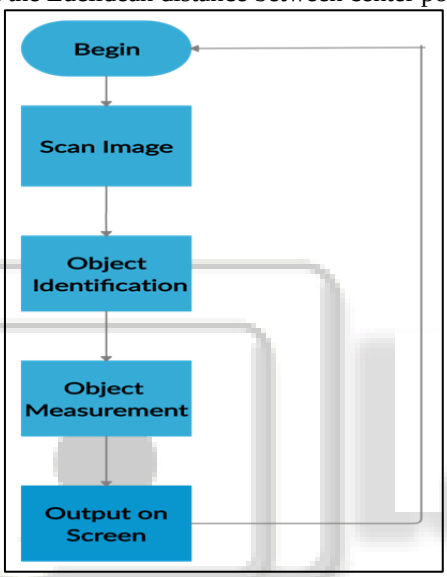

Fig. 2: Flow chart of Proposed System

IV. Working of Proposed System

First of all we have to visit or open Soi (Size of Objects in an Image). After visiting oue web based application user have to browse its image from its system. This image is the image which user wants to upload on our website and all objects of that image is going to be measured by Soi (Size of Objects in an Image).

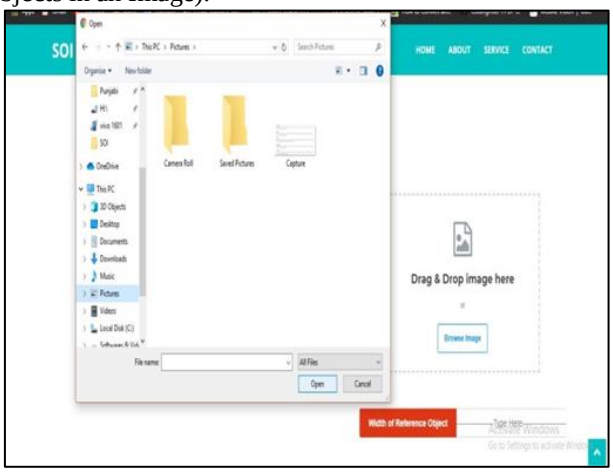

Fig. 3: Implementation

After browsing its image user have to select that image and press open button .after uploading their image user have to enter size of reference object. Size of reference object should be known to the user and accuracy of overall measurement is strictly depend upon size of reference object. After entering size Soi (Size of Objects in an Image) begins measurements and within a minute measurement of all objects are shown on users Screen.

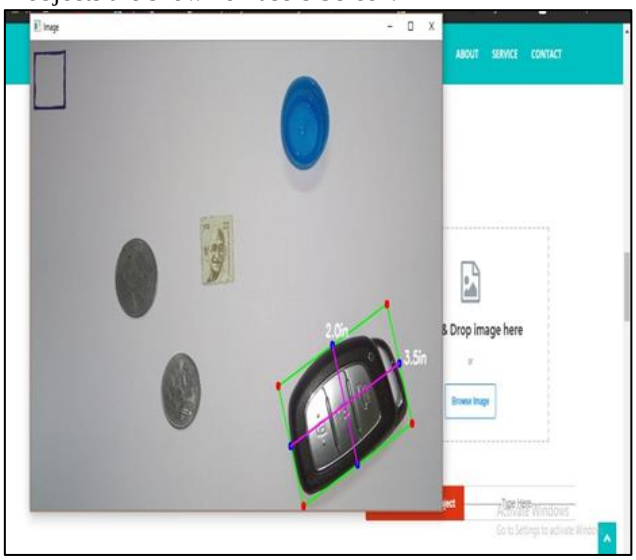

Fig. 4: Output

V. Conclusion

In this paper we are proposed a system which has demonstrated a website which helps users to calculate Size of objects present within an uploaded image. The main idea behind this project is to recognize the reference object(which is the left most object always) and with the help of that object and measurements of that object we can measure and provide user measurements of all objects present in that image. The image uploaded by user is first preprocessed and objects are detected of that image. We have used pixel per matric ratio to perfrom overall measurements. SoI(Size of Objects in an Image) uses python and some of its libraries like OpenCV, Scipy, Numphy, Imuitls to calculate and measure size of objects.The proposed system is user friendly fast and cost efficient and works brilliantly, effectively and Accurately.

References

[1] D. Webster, "A pulsed ultrasonic distance measurement system based upon phase digitizing," IEEE Transaction on Instrumentation and Measurement, Vol. 43, No. 4, Aug. 1994, pp. 578-582Akhil S. Deshpande1, Shreyas S. Vaidya, Pravin B. Swami3, Pavan R. Jaiswal4 "Integration of speech, Image and text processing technologies", International Research Journal of Engineering and Technology (IRJET), Volume: 04 Issue: 04 Apr -2017

[2] Chen.W, Yue.H, Wang.J, Wu.X. An improved edge detection algorithm for depth map in painting. Optics and Lasers in Engineering 2014;55: 69–77.

[3] Asha G. Hagargund, Sharsha Vanria Thota, Mitadru Bera, Eram Fatima Shaik,"Image to Speech Conversion

for Visually Impaired", International Journal of Latest Research in Engineering and Technology (IJLRET), 2017
[4] An Embedded Real-Time Object Detection and Measurement of its Size. Nashwan Adnan Othman, Mehmet Umut Salur, Mehmet Karakose, Ilhan Aydin.
[5] https://medium.com/fintechexplained/why-should-we-use-numpy-c14a4fb03ee9
[6] https://downloads.tomsguide.com/Smart-Measure,0301-34556.html
[7] https://www.appszoom.com/android_applications/tools/partometer-camera-measure_bgkad.html
[8] https://www.pyimagesearch.com/2016/03/28/measuring-size-of-objects-in-an-image-with-opencv/
[9] Machine learnt image processing to predict weight and size of rice kernels Samrendra K. Singh, Sriram K. Vidyarthi, Rakhee Tiwari.
[10] Virginia Menezes, Vamsikrishna Patchava, M. Surya Deekshith Gupta, "Surveillance and monitoring system using Raspberry Pi and SimpleCV", 2015 International Conference on Green Computing and Internet of Things (ICGCIoT), vol. 00, no. pp. 1276-1278, 2015, doi:10.1109/ICGCIoT.2015.7380661.
[11] Ms. RenukaChuimurkar, Prof. Vijay Bagdi, "Smart Surveillance Security &Monitoring System Using Raspberry PI and PIR Sensor", International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-2, Issue-1, January 2016 ISSN: 2395-3470
[12] N. A. Othman and I. Aydin, "A new IoT combined body detection of people by using computer vision for security application," 2017 9th International Conference on Computational Intelligence and Communication Networks (CICN), Girne, 2017, pp. 108-112.
[13] Y. y. Zheng, J. l. Rao and L. Wu, "Edge detection methods in digital image processing," 2010 5th International Conference on Computer Science & Education, Hefei, 2010, pp. 471-473.
[14] Y. y. Zheng, J. l. Rao and L. Wu, "Edge detection methods in digital image processing," 2010 5th International Conference on Computer Science & Education, Hefei, 2010, pp. 471-473
[15] G. Bradsky, A. Kaehler, "Learning OpenCV, Computer Vision with the OpenCV Library" (Book Style), O'Reilly Media, Sebastopol, CA, 2008.

