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REAL TIME OBJECT MEASUREMENT

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ABSTRACT- In these days of the 4th industrial revolution, real-time object detection and dimensioning is an important aspect from an industrial point of view. These are requisite topics of computer vision problems. This study presents an augmented technique for detecting objects and computing their real-time measurements from an IOT video device such as a webcam. We have suggested an object measurement technique in real-time using AI and IOT technologieslike OpenCV libraries and webcam respectively. OpenCV includes many libraries and algorithms that are used in this project.

1. INTRODUCTION

"Real-Time Object Measurement" is a program that can be used to detect real-time object's dimensions. There are not many real-time object measurement models and this prototype can be used enormously further. This is an essential topic of computer vision problems. As stated, this project presents a technique for computing the measurements in real-time from images. To explain it's working it basically uses a webcam and a white paper background to detect the object. After detecting the object, it displays its dimensions in specified measuring units at real time. In the implementation of the proposed technique, we designed a system that used OpenCV software library. Some advantages of using this methodology are that it is very useful in the industrial field, it simplifies human work, and many more which are noted below in the advantages and disadvantages section. To calculate the size of each object, the prerequisite is that we need to determine the reference object. In this case, it is, plain white paper. After that, the dimensions of the objects inside the reference are measured or it will be calculated and hence the size of the object is displayed.

Object detection is perhaps the main exploration research in computer vision. Object detection is a technique that distinguishes the semantic

objects of a specific class in digital images and videos. In this, our point is to distinguish numerous objects from an image. The most well-known object to identify in this application are the animals, bottle, and people. There are different techniques for object identification, they can be separated into two classifications, initial one is the algorithms dependent on Classifications.

2. LITERATURE SURVEY

In the year 2017 Tsung-Yi Lin, Piotr Dollar, Ross Girshick, KaimingHe,BharathHariharan, and SergeBelongie proposed Feature Pyramid Networks for Object Detection. With the launch of Faster-RCNN, YOLO, and SSD in 2015, it seems like the overall structure an object identifier is resolved. Analysts begin to take a gander at improving every individual piece of these networks. Highlight Pyramid Networks is an endeavor to improve the identification head by utilizing highlights from various layers to frame a feature pyramid. This feature pyramid thought isn't novel in computer vision research. In those days when highlights are still physically planned, feature pyramid is now a powerful method to recognize patterns at various levels. Utilizing the Feature Pyramid in deep earning is likewise not a groundbreaking thought: SSPNet, FCN, and SSD all showed the advantage of aggregating multiple layer highlights before classification. Nonetheless, how to share the feature pyramid among RPN and the region-based detector is still yet to be resolved.

In the year 2017 Kaiming He, Georgia Gkioxari, Piotr Dollar, Ross Girshick proposed Mask R-CNN. In this paper Mask RCNN is certainly not a commonplace object detection network. It was intended to settle a difficult example division task, i.e., making a mask for each object in the scene Nonetheless, Mask R-CNN indicated an incredible augmentation to the Faster R-CNN framework, and furthermore thusly motivated object location research. The fundamental thought is to add a binary mask prediction branch after ROI pooling alongside the current bounding box and characterization branches. Obviously, both perform multiple tasks preparing (division + detection) and the new ROI Align layer add to some improvement over the bounding box benchmark.

3. EXISTING SYSTEM:

- Manual Testing and measuring the objects. Requires measuring tools.
- ML based Training process is required.
- No live object measurement using images. No Real time camera access measurement.

DISADVANTAGES OF EXISTING SYSTEM:

- **Saving Output**

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The Output given does not get backed up in any record hence there is a need for a backing system

4. PROPOSED SYSTEM:

- This project presents a technique for computing the measurements in real-time from images.
- To explain it's working it basically uses a webcam and a white paper background to detect the object.
- After detecting the object, it displays its dimensions in specified measuring units at real time.
- In the implementation of the proposed technique, we designed a system that used OpenCV software library

ADVANTAGES OF PROPOSED SYSTEM:

- It avoids interference from other wireless devices.
- It reduces man error and increases proficiency.
- It can be used easily.
- Less error is directly proportional to more profit.
- Not expensive that is it is low cost only a webcam is required

5. PLATFORM OR TECHNOLOGY USED:

PyCharm

- It is an IDE (integrated development environment) specifically used for the python language.
- PyCharm is easy to use. It supports OpenCV and all its libraries once dependencies are installed.
- Supports all frameworks.

OpenCV

- It is an open-source library used in computer vision, machine learning, image processing.
- There are various applications and functionality of OpenCV which makes it versatile.

NumPy

- It is a python library. It is basically used to do mathematical operations and it is easy to work with arrays.
- It is easy to use and gives excellent results. It can perform great mathematical operations.

IOT Device-Webcam

- A device with various applications. Webcam with a mid-level pixel reading ability is perfect. Device driver software needs to be installed and should work well for the program to be executed.

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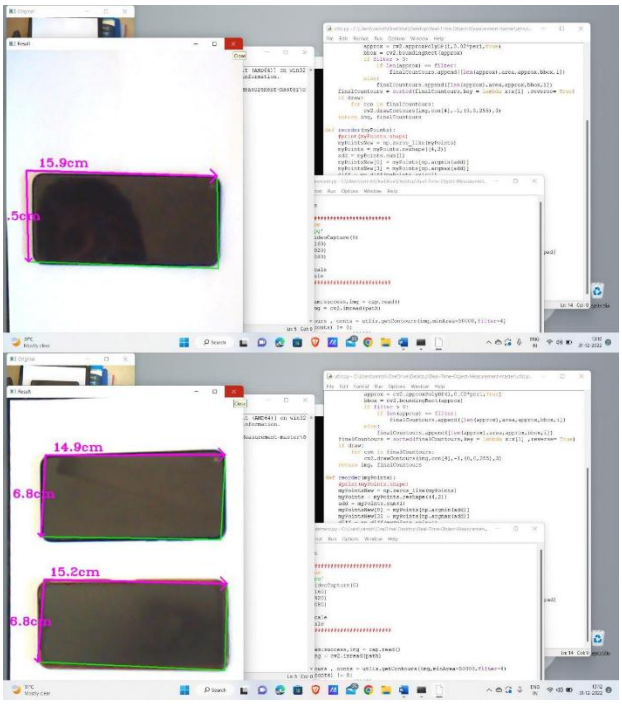
6. RESULTS:



7. CONCLUSION

As a result of this system, many improvements can be made to the industrial sector. The project successfully measures the dimensions of the object in real-time. Hence the computer vision (webcam device and code) is used to measure the dimensions in real-time. It captures the image from the Realtime video frame and then displays its dimensions. A Canny edge detector is successfully used to detect the dimensions. This technique works fast and has many advantages and salient features that can be implemented in the real world.

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Usercams

General

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