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Image Processing for Object Counting

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Abstract: *Object counting is a challenging problem in image processing. It is routinely carried out in different areas of industries, research institutes, laboratories, agriculture industries among others. Object counting is important for quantitative analysis that depends on estimation of certain elements.*

Key Word: *Python, Open CV.*

I.INTRODUCTION

Object counting is a very common task performed in different industries. Figuring out how many objects in an image is required in image analysis. Object counting is used to get certain number of elements from images. These elements act as a source of information for quantitative analysis, motion tracking and qualitative analysis.

Object recognition is to describe a collection of related computer vision tasks that involve in activities like identifying objects in digital photographs. Image classification involves activities such as predicting the class of one object in an image.

Object recognition refers to a collection of related tasks for identifying objects in digital photographs. Region-based Convolutional Neural Networks, or R-CNNs, is a family of techniques for addressing object localization and recognition tasks, designed for model performance.

II.PROBLEM FORMULATION

As most of the work is done manually or on approximation such as counting objects present in image or how many people are there in one frame etc. This process requires continuous ministrations. If we can teach our machine to count how many objects are there in our image then our task can be easier and can be completed with utmost accuracy.

III.LITERATURE REVIEW

There are some system available in the market but they are not present with that much accuracy that we our providing in our project. We used open-cv to maintain the database or pics we will provide to the modules.

IV. METHODOLOGY

We developed our project using the software development life cycle. In the development of our product, we used the Agile model. The Agile [1] model is a model of SDLC which is a combination of two process models incremental and iterative. Image processing for object counting is developed on the basis of incremental process model [2] of the Agile model which allows the user to divide the large project into different parts/ modules.

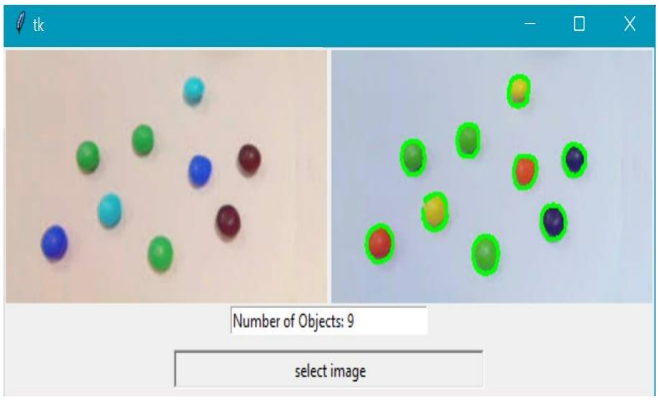
Technology: -

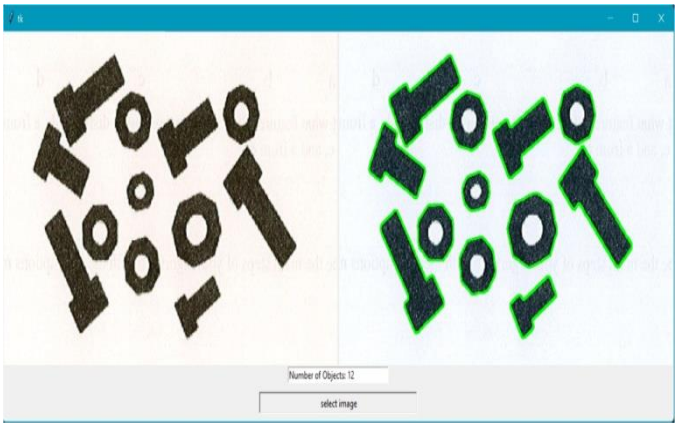
- **Python** [4] - Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small- and large-scale projects.
- **Open-CV** [5] - OpenCV is a library of programming functions mainly aimed at real-time computer vision. Originally developed by Intel, it was later supported by Willow Garage then Itseez. The library is cross-platform and free for use under the open-source Apache 2 License.

V.RESULT DISCUSSION

Object counting using image processing has huge applications where automation is to be introduced and time of counting is to be reduced. Some of the main applications of object counting in industrial systems are packaging, quality control, and so on. It is helpful in the research areas where objects are of very small size. Object counting algorithm can be also used to track and identify objects. The present methods can be extended to have counting system based on user selected

attributes.





VI.CONCLUSION

Image processing techniques are helpful for object counting and reduce the time of counting effectively. By using this thesis and based on experimental results we are able to detect object more precisely and identify the objects individually. Proper recognition of the object is important for object counting. The accuracy of the algorithm depends on camera used, size of objects, whether or not objects touching and illumination conditions.

VII.ACKNOWLEGEMENT

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