

**Real Time Barcode Scanner Using Python and Open CV**

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**Abstract** - In this paper Real Time Barcode Scanner using python and OpenCV is discussed. Barcodes are the main part of the product or machine which has all the information inbuilt. Augmented Reality based Barcode scanner system allows the better and easy understanding of the product. This is the very advanced type of barcode scanner system which is in research.

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**Keywords** – Augmented Reality, Barcode scanner, openCV, Python, Realtime

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**I.INTRODUCTION**

Barcodes are symbols that can be scanned electronically using laser or camera-based systems. They carry information about the object to which it is attached in a machine-readable format. As opposed to manual data entry, which is tedious and prone to inaccuracies, barcodes enable automatic data capture with 100% accuracy. Augmented reality is the integration of digital information with the user's environment in real time. Unlike virtual reality, which creates a totally artificial environment, augmented reality uses the existing environment and overlays new information on top of it. The main objective of this paper is to develop a system which decodes the barcode and overlay the data of the barcode in the same output screen.

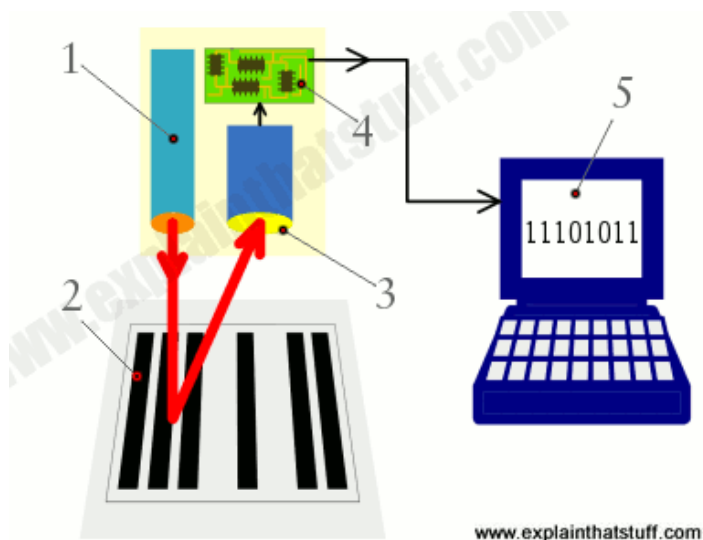
**II. LITERATURE SURVEY**

Weibing Chen, et al [1] in this journal proposed a method in order to lower the consumed threshold. A practical image pre-processing method was proposed for Quick Response (QR) barcode recognition. Instead of using the traditional methods such as edge detection and line detection, the encoding characteristic of QR had been used, thus the influence by background noise and geometric distortion was minimized.

N. M. Z. Hashim, et al [2], 'Barcode Recognition System', in this journal proposed a project to develop a barcode recognition system by using image processing. The system will be able to read barcode through an image and the system capable to capture the image by using a webcam. This project used MATLAB software program to develop the system and it will integrate with webcam or digital camera. System will analyse the image and then display on the Graphical User Interface (GUI) the barcode type, data and size of the image. System is designed to recognize different types of barcode and display the data once the barcode image is captured.

**III. BARCODE SCANNER**

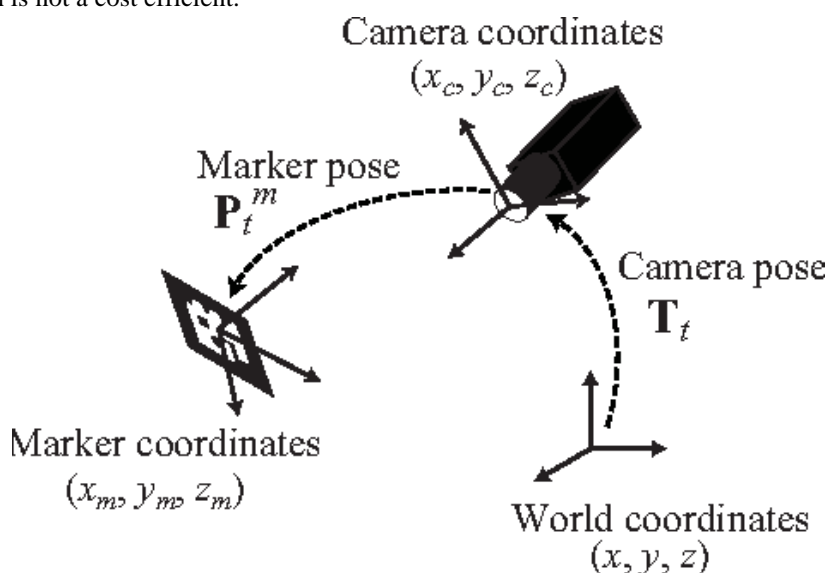
Barcode scanners are used to read a barcode and decode its data for various purposes. Most of the barcode readers are using laser or other lights for example pen-type readers, laser reader to decode the barcode and connected to the data base to get the details of the barcode which are mostly done within a selected network. The sensor in the barcode scanner detects the reflected light from the illumination system (the red light) and generates an analog signal that is sent to the decoder. The decoder interprets that signal, validates the barcode using the check digit, and converts it into text. Here we are going to do Camera-Based Readers which uses camera and some image processing techniques.



**Fig 1: Work flow of Barcode Scanner**

#### IV. AUGMENTED REALITY

Augmented Reality (AR) is an interactive experience of a real-world environment whose elements are “augmented” by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory, and olfactory. Here in augmented reality the main thing is overlaying the data over the real world. This may be constructive (i.e., addition to real environment) or destructive (i.e., masking the real environment). It gives the user to have a mixed reality experience. Bringing augmented reality in to barcode scanner makes the user to get the data easier without getting additional components, like digital barcode scanner for reading simple barcodes which is not a cost efficient.



**Fig 2: Coordinates transformation in Augmented Reality**

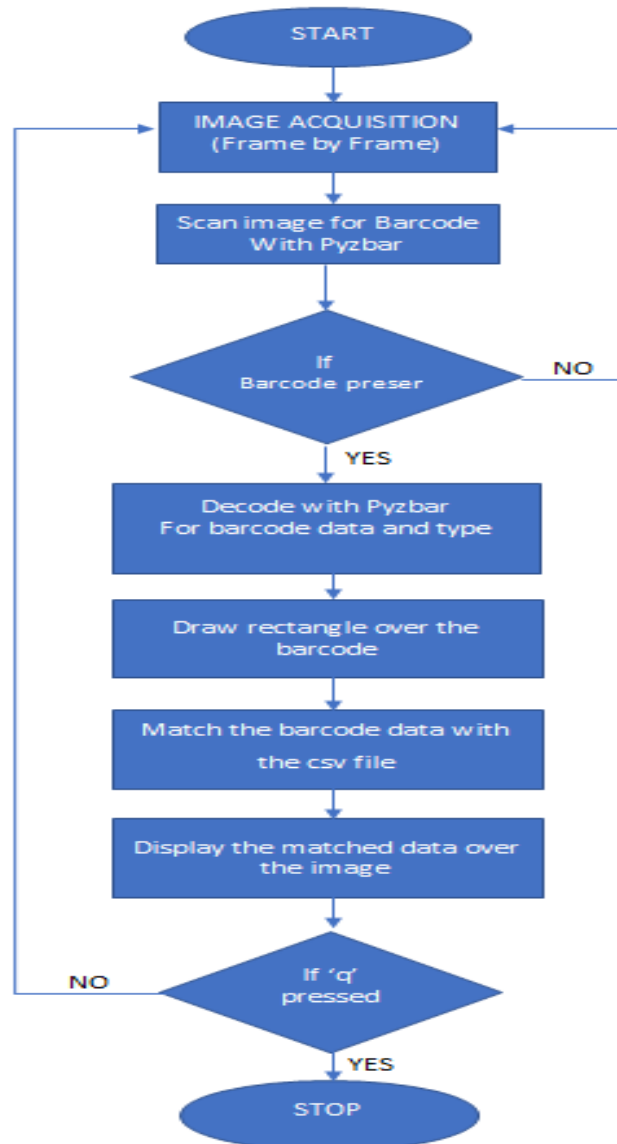
#### V. PYTHON AND OPENCV

OpenCV (Open Source Computer Vision Library) is an open source computer vision and machine learning software library. OpenCV was built to provide a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products. It has lot of optimized algorithms which can be used easily to do our tasks.

Pyzbar is the python library for reading barcodes using camera which inherits OpenCV as it is the base for image processing. Pyzbar detects the barcode in a page and decodes it after thresholding the barcode and gets the details of the barcode.

## VI. PROJECT IMPLEMENTATION

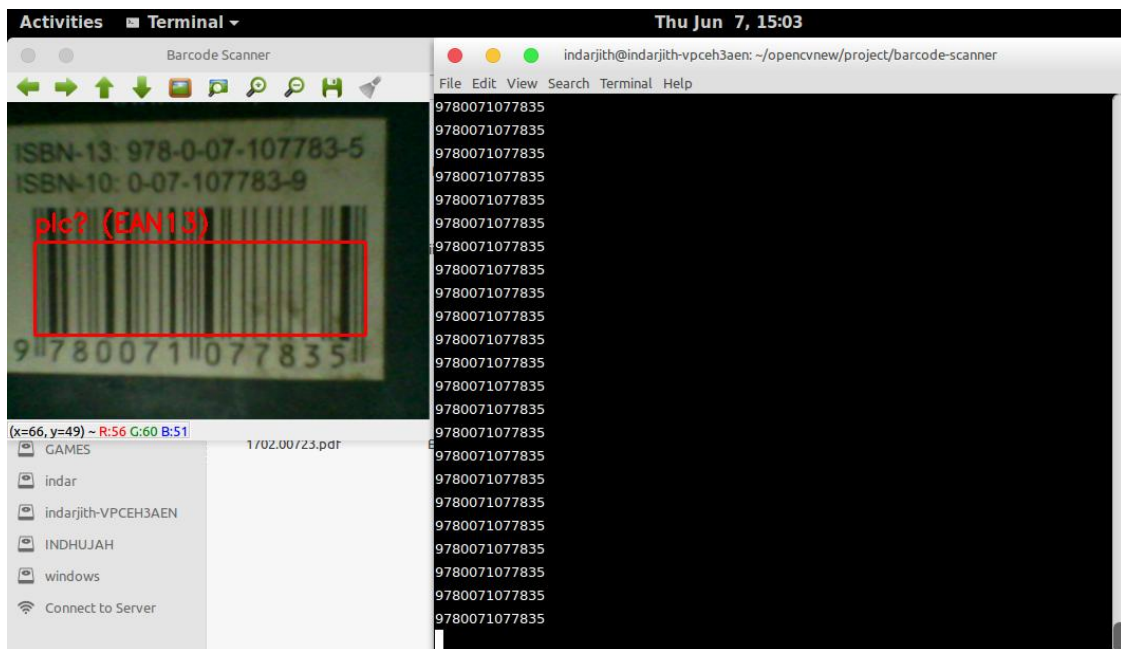
In this application Python programming using OpenCV is done to acquire and process the image with the help of Pyzbar library. After the camera started, each frame received will be processed with the Pyzbar-scanner function and checked for the availability of any barcode. If any barcode found then the barcode is decoded with Pyzbar to get the barcode data. The barcode data can be compared with the barcode using any files to get any machine data inside the industry. The matched data will be displayed or overlaid in the raw image frame by using puttext function. Thus, it implements the augmented reality. The program flow will be as represented in the Fig 3.



**Fig 3: Flow chart**

## VII. RESULTS

The final output image is got as represented in the Fig 4. The matched barcode data can be displayed as per the user's need. We can change the position of the data displayed and also the color and size of the fonts can be changed easily.



**Fig 4: Final Output image**

## VIII. CONCLUSION

Barcode reader can be implemented in many ways where this method is one of the successful method which simpler than other methods. It can be implemented wherever it is required as it requires only open source libraries and languages. This program can be used not only within a company overall its network to get the machine data which is entered in a CSV file by developing it as a software. Moreover, by connecting the barcode data file and this barcode reader with IoT the current machine data can be easily acquired at any instances.

## IX. REFERENCES

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