**Barcode reader and QR Code reader with Python**

**In this free Python project, I will talk to you about how to make a barcode reader and QR code reader with Python and machine learning. This is a great machine learning task to get started with computers .**

**Barcodes and QR codes are very interesting and exciting because they store information in a different format. The interesting part about them is that we can't tell what they store in them until we analyze them. It's like solving a puzzle game. Another thing I like about them is that they can connect us to the Internet as part of the physical world .**

**barcode readers and QR code readers work?**

**QR code devices work, let's do some hands-on practice. Turn on your phone's camera and scan a QR code like the image below . ( In some phones, you need to install the QR code scanner software , which is available on platforms such as Google Play , App Store , and the market ).**

**You will see a link appear. It is very easy to use. Today you will learn how to create your own barcode and QR code with Python and machine learning. let 's start**

**I'll start by installing the libraries we need for this project and then start coding. For this, we recommend using a normal code editor such as VScode Or Pycharm use .**

**start of work :**

**The first step is to use the three libraries Pillow , OpenCV and Pyzbar install the Pillow is an extension of PIL which means Python Image Library .**

**OpenCV is a well-known library, especially in the field of computer vision . The last library we need is Pyzbar It helps us to read barcodes and QR codes . Using the pip command , you can easily install all these libraries .**

**How to create barcode and QR code with Python and machine learning?**

**Now we have reached the next step, which is to write the decode function . Where interesting things happen. The decoding function mainly performs the following three tasks :**

* **barcode /QR code that we are going to show to the camera .**
* **It identifies and stores the added information as text in the barcode /QR code .**
* **Finally, it exports the saved information as a text document .**
* **Let's import the libraries we installed before writing in the function :**

**import cv2**

**from pyzbar import pyzbar**

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**Now let's define the decoding function :**

**def read\_barcodes ( frame ):**

**barcodes = pyzbar . decode ( frame )**

**for barcodes in barcodes :**

**x , y , w , h = barcode . rect**

**barcode\_info = barcode . data . decode ( 'utf-8' )**

**CV2 . rectangle ( frame , ( x , y ), ( x + w , y + h ), ( 0 , 255 , 0 ), 2 )**

**font = cv2 . FONT\_HERSHEY\_DUPLEX**

**CV2 . putText ( frame , barcode\_info , ( x + 6 , y- \_ 6 ), font , 2.0 , ( 255 , 255 , 255 ), 1 )**

**with open ( "barcode\_result.txt" , mode = 'w' ) as file :**

**file . write ( "Recognized Barcode:" + barcode\_info )**

**return frame**

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**Now let's review the above function in this free Python project to see what we've done :**

* **First, we decode the barcode or QR code information. Then we draw a rectangle around it. This helps us to see if our device has recognized the barcode /QR code or not .**
* **In the second step, we add text above the rectangle that is created. Displays the text of the decoded information .**
* **In the third step, we export the information to a text document .**

**Write the main function**

**Now the next step is to write the main function to make barcode reader and QR code reader with Python. Let's create our main function for this free Python project :**

**def main():**

**camera = cv2 . Video Capture ( 0 )**

**ret , frame = camera . read ()**

**while ret :**

**ret , frame = camera . read ()**

**frame = read\_barcode ( frame )**

**CV2 . imshow ( 'Barcode/QR code reader' , frame )**

**if cv2 . waitKey ( 1 ) & 0xFF == 27 :**

**break**

**camera . release ()**

**CV2 . destroyAllWindows ()**

**if \_\_name\_\_ == '\_\_main\_\_' :**

**main ()**

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**Now let's review this main function to see what we've done :**

* **we turn on the computer camera using OpenCV . If you have an external camera, you should change the value from 0 to 1 depending on your device .**
* **we execute a while loop to continue the decryption operation until the Esc key is pressed. Otherwise, the loop will not stop and cause problems .**
* **Then close the program window . OpenCV does it all. You only need to call the methods .**
* **Finally, we call the main function to execute the program .**

**scan any QR code and barcode you want by showing the code to your laptop camera .**

**This program reads different barcodes and QR codes for you. If you're looking to use computer vision and artificial intelligence in real life, working on hands-on programming projects like this is the best way to hone your coding skills .**

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