"COKE FILL LEVEL INSPECTION SYSTEM USING OPENCV AND IMAGE PROCESSING TECHNIQUES"

1. Problem Definition:

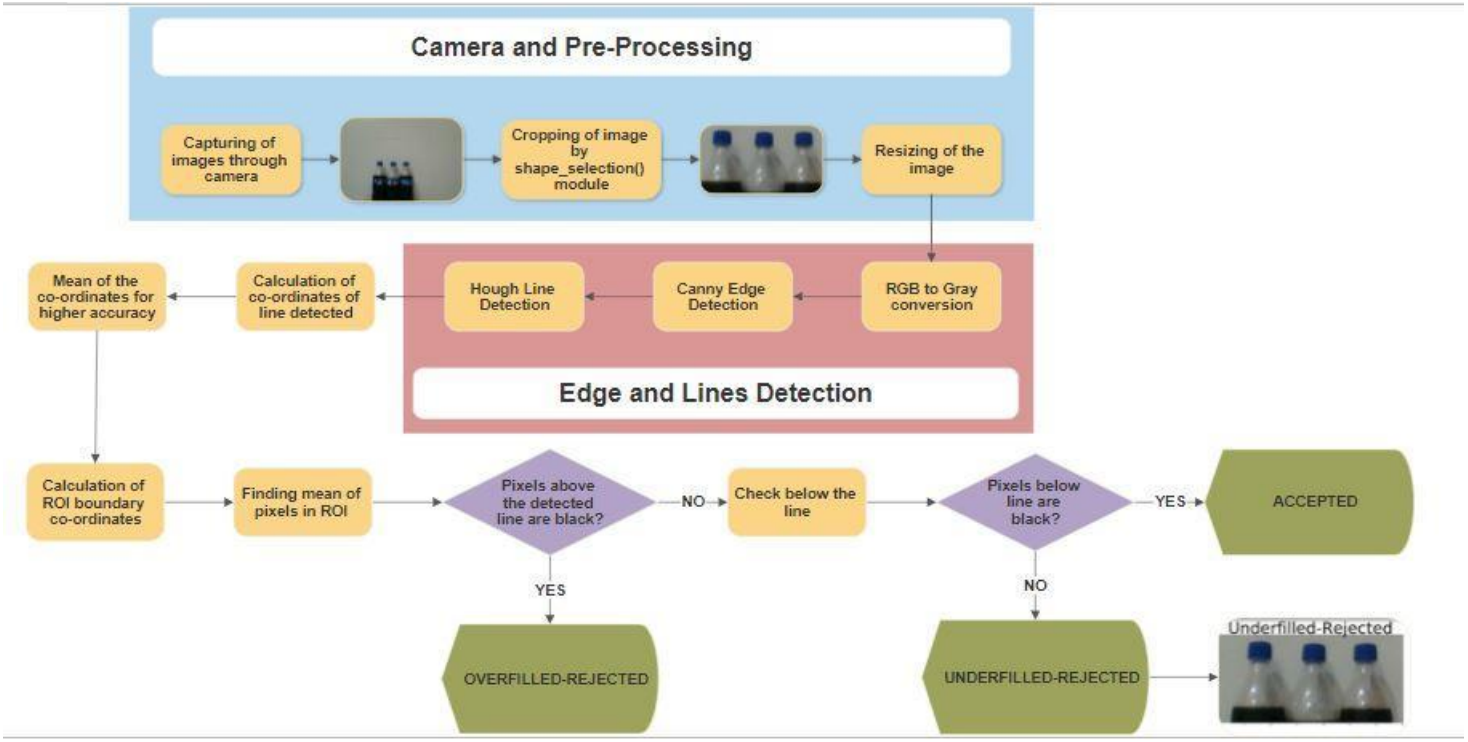
Proposed system aims at the detection of the liquid fill level using Image Processing Techniques.
1. The main objective of our project is to overcome the errors caused during the manual inspection of the Liquid fill level in the processing industries.

2. This work provides a better alternative for determining the level of beverage in the bottle.

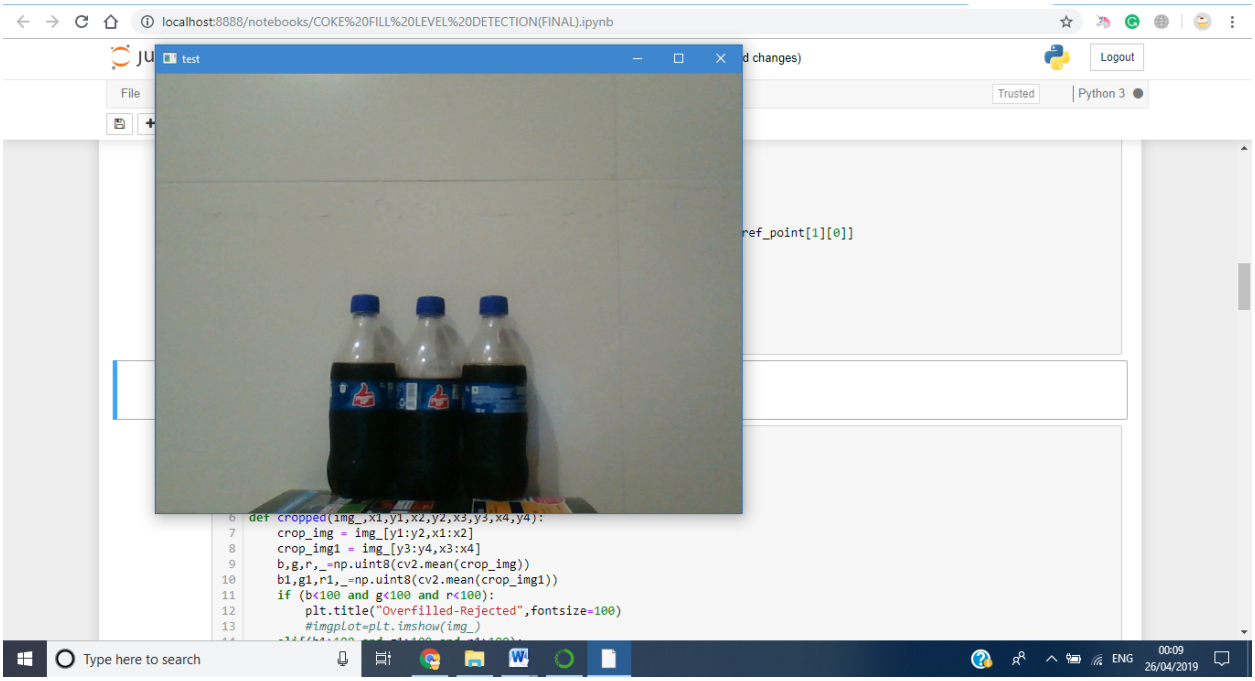
2. Solution:

The proposed system is built in Python 3.7 on Jupyter Notebook(of Anaconda Navigator). Our system aims to check the liquid fill level detection of coke bottles using OpenCV and Image Processing Techniques. A real time image of coke bottle along with two references of coke bottles which are correctly filled is provided. Pre-processing of the image is performed and Canny Edge Detection and Hough Line Detection are implemented for detecting the level of the beverage in the bottle. According to the calculated line coordinates, the mean of the coordinates of multiple images of series of bottles in the production line are taken into consideration which solves the issue of the irregularity in the line detection. A rectangular Region of Interest (ROI) is identified using the coordinates of the detected line. Pixels are then compared in the ROI and the bottle is classified as correctly filled, over-filled or under-filled and images and their labels are plotted as a graph using matplotlib library.

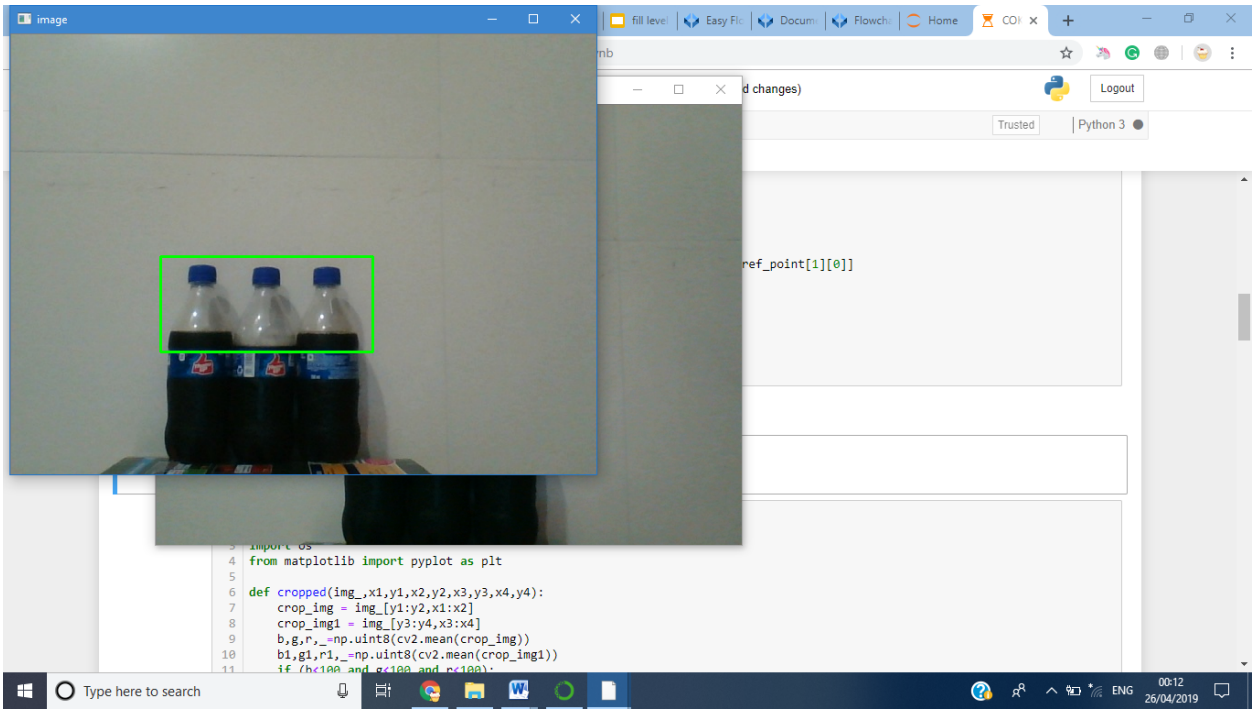
3. Design of the System:



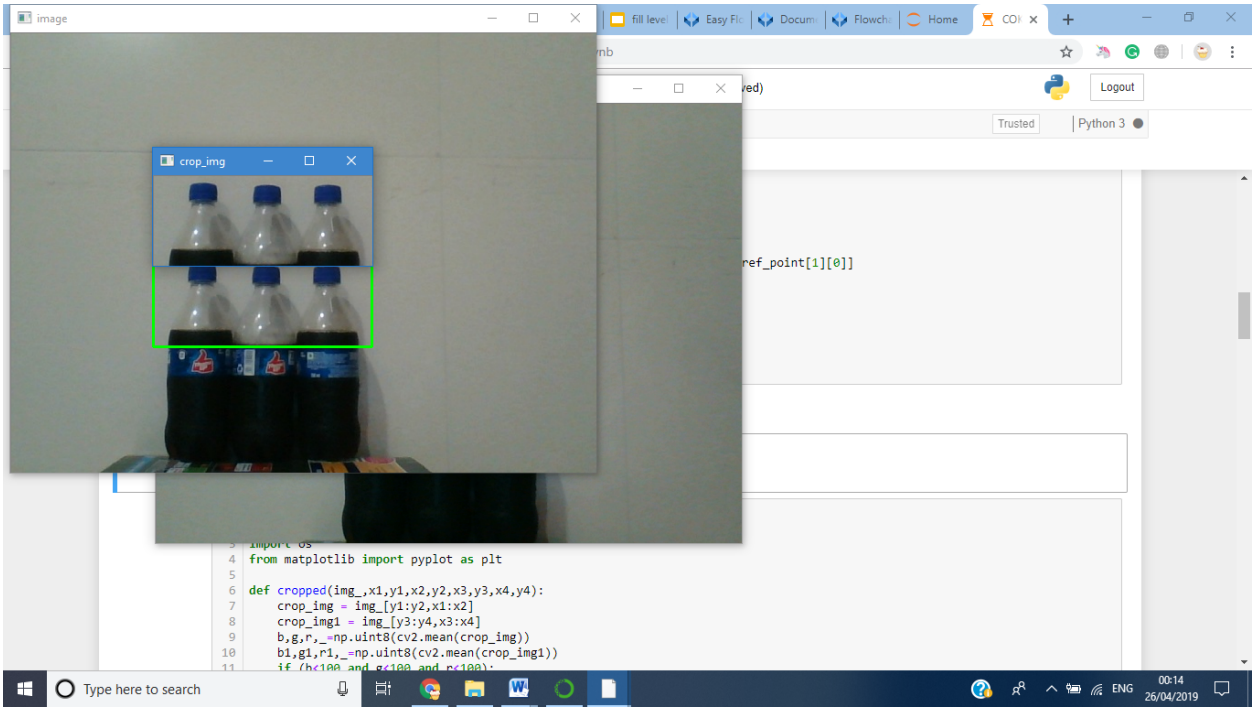
4. Results:



fig(4.1) Camera Module



fig(4.2) shape_selection() on the captured image



fig(4.3) Cropped image

fig(4.4) Result