Automatic Medicine Analysis System in a Pharamaceutical Industry using Digital Image Processing

Shavita Koul[1] Surbhi Paliwal[2] Tambe Rasika Ramakant[3] Prof.Y.R.Dhumal[4]
[1,2,3]B.E. Student [4]Professor
[1,2,3,4]Department of Electronics & Telecommunication Engineering
[1,2,3,4]Bharati Vidyapeeth's College of Engg for Women, Pune

Abstract— Now-a-days people are prone to different types of diseases so medication has become very important in everyone's life as they are suffering from diseases. There are certain diseases which cannot be cured without medication. Since due to spreading of a numerous diseases production of medicines have increased in recent days. In Today's era application of image processing in many industrial processes has proved its universality and superiority. This paper present color based object sorting system as well as deformity in tablets by the use of image processing and machine vision system. The manual survey poses further problems in keeping consistency in uniformity in sorting. For speeding up the process and to maintain the consistency and uniformity of system, we have designed and implemented a prototypical computer vision based sorting system. However during production there may be damages like breakage, cracks present in the tablets or capsules. Utilization of these damaged tablets may cause some severe problems in humans. Despite, most of the tablets are not advisable to be consumed in damage form. So Manual inspection proves to be a challenging task. Image processing plays a major role in automation of visual inspection. So we developed some ideas to identify the damaged tablets after production.

Key words: Image Processing, MATLAB, Machine Vision, Webcam, Servo Motor

I. INTRODUCTION

The present scenario of the pharmaceutical industries seems to be developing in a higher pace as there are numerous diseases emerging all over the world. The regimen provided by the products of such industries act as a major global health care system. Image Processing involves techniques and algorithms for processing the digital images. Image processing provides greater contribution to science and technology as the digital images proved greater impact on modern society. They help in faster manipulation of digital images. Manual inspection is automated using image processing techniques. In pharmaceutical industry, drugs have to be inspected for defects and anomalies. Drugs with defects are not preferable to be consumed. There may be side effects in utilization of broken drugs.This paper aims to develop a system that can be useful for automatically sorting in pharmaceutical industries using image processing. We design a system that can be used to identify and separate the medicines i.e. Tablets using their colour. Mainly the colour sorters are used in agricultural industry like rice sorter, beans sorter, peanut sorter and are used in other industrial applications also like quartz sand sorter, plastic granule sorting of coloured nuts and bolts etc. It reduces the human effort, labour and cost, also time of operation.It also increases the efficiency since the automatic sorting is much faster than manual sorting and most of errors caused by humans due to their limited potential are eliminated due to use of mechanized system. Color based sorting is extensively used in many industries for sorting purposes to ensure the quality of the object is accurate, for e.g.Food industries, pharmaceutical industries, automotive industries, agriculture industries. So by using digital image processing proposed system is fast, accurate, economical, robust and cost efficient.

II. EXISTING SYSTEM

In the modern Era we have systems for pharmaceutical industry that works separately either for basically aiming only on sorting or on defection in medicine. In the industry they have two different systems working separately for medicines analysis.

III. PROPOSED SYSTEM

In this system we have combined two existing systems of sorting of medicines and detection of tablets. As this system is more accurate and reliable and smart of machine vision mechanism.

IV. PROPOSED SYSTEM ARCHITECTURE

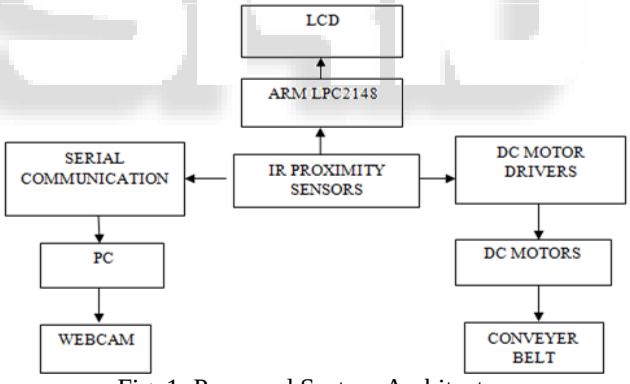

Fig. 1: Proposed System Architecture

V. DETECTION OF DEFECTED PILL ALGORITHM

1) Input the image of tablet to system.
2) Initialize camera then Detection of tablets through camera.
3) Enhancement and preprocessing of image,gray scale conversion take place.
4) Template matching process takes place for tablet.
5) Region based statistics carried out.
6) Calculation of pixels through MATLAB.
7) Detection of Corner and Edges takes place.
8) Defects found.

VI. FEATURES OF SYSTEM

1) System works on 230 v ac 50 Hz
2) ARM Microcontroller LPC2148

3) L293D dual dc motor driver IC used to drive dc motors
4) 12 v dc 45 rpm dc motors used to drive conveyer and push mechanism
5) Cp2102 serial to converter used to send/receive data from microcontroller to pc.
6) Canny Edge Detection Algorithm for defected pill detection.
7) Programming done by MATLAB processing software.

VII. EXPECTED RESULT

Automation of Visual inspection is very important in manufacturing industry for quality assurance of products, thus proposed work will help in maintaining a fully automatic system for both sorting and detection of defected pill. . It will also help in reducing man power and providing more accuracy. Hence in dynamic world using digital image processing it helps in automatic and accurate study to be done in this field.

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