Fault Detection and Diagnosis of Plastic Film Packing Process

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ABSTRACT*:* In Plastic film packing there may be errors occurring during the final outcome from the automated system.Due to some errors in the automation system.Our project provides the entire fault detection of the plastic film process using Hill climbing algorithm.This algorithm is used to find the Missing packed product in the film. Here using Hill Climbing algorithm we find the missing tablets in the plastic tabulate strip by using capturing and image processing we compare the template image with the blister image from the process.Thus fault in packed tabulate strips are identified. Here not only the faults or image mismatch are identified, the number of matches and mismatches are also found and displayed in the output.The cyclic process is repeated to determine the overall errors in the process such as missing tabulates and resultant matches are displayed.

KEYWORDS*:*Template, image,image processing, Blister image

## I.INTRODUCTION

Errors are very common in any types of devices or automation system.These errors are further called as faults which occur in plastic film packing Effective use of packing the tabulate industry by using image processing. The source image is called as template image and the image in the output of the process is called as the blister image. Using Image acquisition .The image is initially acquired by image acquisition and then compared by using image processing. After processing the number of matching and mismatching are counted. This number of counts are displayed in the front panel.The common time delay is introduced in the process when the output from the conveyer moves in accordance with the delay introduced in the inputs.The delay regulates the time duration and also the order of the tabulate in conveyer motion.

This projectuses most innovative concept of image processing in LabVIEWsoftware.This is a new approach in which Image processing is used for image recognition and counting the matches.This image processing is supported only in LabVIEW2012 which introduces this image recognition and comparison.Image processing is the processing of images using mathematical operations by using any form of signal processing. For which the input is an image, where a series of images or a video such as a photography or a videoframe. The output of the image processing may be either an image or a set of characteristics or parameters related to image.

II.SYSTEM MODEL AND ASSUMPTIONS

The System which uses image processing have various blocks which acquire images and process it and compares the Blister image with the template image.The entire comparison is made and the combination of matchings and mismatchings are obtained. These matchings will be displayed in the front panel of the LabVIEW software. The general process diagram for the entire fault detection in plastic packing processes is shown as

Input Blister → Image Acquisition → Vision Assistant → Image Recognition → Resultant Matches
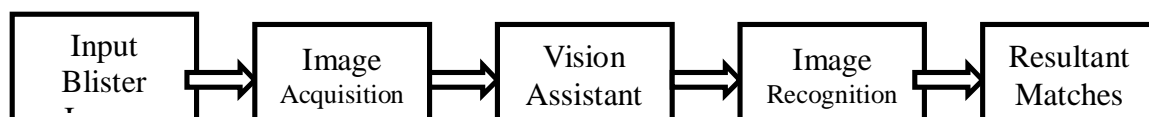
The input blister image and the template image are made to compare .The image is the blister which acquires and the image acquisition takes place.The overall process occurs with the image processing and the effective results are obtained.A particular time delay is introduced and the delay is to be changed by the user itself in the front panel. The output also has the assumption of pass or fail which is given in regard to obtain the match.

The input image is set to given inside the image processing block. The image is given as the input by setting the file path by using build path block in the LabVIEW software. This build path acquires the image from the input files and then assigns onto the vision acquisition. The vision acquisition have the image format, which can even be changed in accordance with the input images available. The switch case is given the comparison process is done repeatedly. Here the condition of image matching is checked and if the condition fails to satisfy then immediately stop condition is executed. The process can be even applied to blurred images of the tabulates. The blurred images can be rectified and corrected by the HSL block, The HSL denotes the Hue Saturation Light where it improves the quality of the image for the image match or mismatch, The Hue Saturation Light increases the flexibility of the images so as to perform the comparison effectively.

III.EFFICIENT COMMUNICATION

The perfect image is set as the template image.The perfectly packed tabulate is chosen for the photograph of the template and is stored. In packing the plastic tabulate strips move onto the conveyer and each strips move line by line in the conveyer automated process.The image processing concept is used here to compare both of the source image and the blister image.The comparison is done by the image acquisition.The output of the conveyer process is acquired in the image acquisition.Then the vision assistant performs the entire communication with the acquisition blocks and the same blister is obtained for further comparison.The effective comparison is made in between each and every blocks of the plastic packing process and the matchings and dis matchings are obtained in the image recognition.In addition to the image recognition the total counts of the match and mismatch are obtained.A time delay of certain milli seconds which are to be changed by the user are given in the front panel.The user interfacing is well done in the delay.

IV.SECURITY

The plastic packing provides high security to the process.It protects from the process from errors. Early detection of errors in the plastic packing process provides the free from errors such as timing delay,Colour mismatch and the tabulate displacement and various other errors in packing are detected in early stage before going for supply.Vision acquisition provides the image path, image file type and time duration of the image display and the changes are well shown in .The greatest advantage of the process is that the image format,Colour of the tabulate and matching colour of the tabulate can be changed manually by the user.This provides the greatest advantage of being reliable to any type of the packing process.This provides the high adaptability not only to pharmaceutical industries and also to garments and other packing and ancillary industries.

Since the input template is saved as the This template is saved for comparison of the blister in the While loop. The while loop checks the condition of image matchings and the entire output of the conveyer is compared with the above template.

V. RESULT AND DISCUSSION

The output of the plastic film packing will be displayed in the front panel of the LabVIEW. The comparison process is done by the while loop. The while loop is placed in the switch case. The comparison is held by while and since it has to be done repeatedly, it is placed inside the switch case. This provides the effective way of repeated comparison of the

input match and the resultant match to obtain total number of matches. To obtain the resultant matches both the values of template and blister are given to the comparator.

The result of the simulation are shown with two of the cases. The initial case is to check the matchings and the result of the comparison fails. Henceforth the delay is to be adjusted by the user. This forms the user interface. Thedelay can be manually changed by the user. In our project the number of matches essential for the perfect match are 12 and after the match or mismatch is found the counts are shown. Each counts of match as well as mismatch are displayed. The delay value provides us the comparison and matchings to obtain the matches.

The Output of the mismatch of the blister and the template is
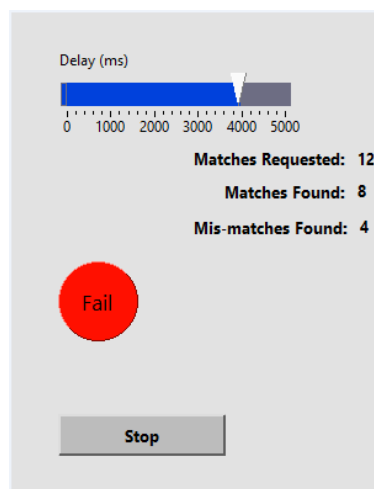
Now again the same set of process is repeated.Here the comparison of blister image and template image is done.The output which indicates the perfect match of the the blister image and the template image with the b number of requested matches and the obtained matches are displayed.This output which represents the delay of 4000 milli seconds and the number of matchings are displayed asinitially the input image is passed to while loop through build path. The vision acquisition is used to determine the image path and their file type. The FSL provides the patter n to provide comparison evento the blurred image.\The image recognition for the different images are
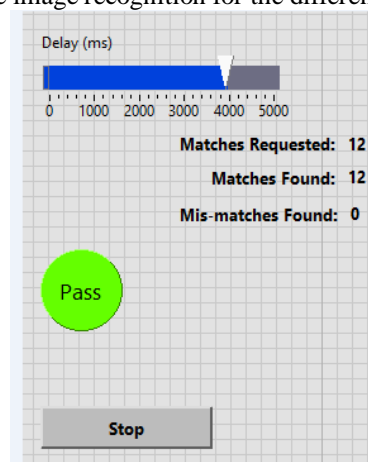
The model image of the conveyer output which have empty strips and misplaced tabultes are shown.By using our project the error will be detected and the mimatch counts are also found for the below model. This is well suited in pharmaceutical industry. With the advancement in technology the packing in blisters was applied to many pharmaceutical products that emerge today.In this case we see the colour change of the tabulate i.e. the replacement of tabulates and the missing of some of tabulates in strips.This case is snapped and taken from the conveyer output which is to be assigned as the blister image.Then it is subjected to further comparison.

The Blurred image which has to be rectified for the comparison is shown below.This blurred image rectification is done by the HSL .This image is passed through HSL for further image processing.

VI.CONCLUSION

Thus this project is very effective in fault detection of the packing process. This is simple as compared to conventional methods. Not only the fault is detected, in addition to that image quality is improved.The greatest feature is the manualadjustment of gain by the user itself.This can be used in pharmaceutical industries for effective tabulate manufacturing and testing. Not only pharmaceutical industry but also can be used for other plastic based packing and stripping industry. The image processing provides the added advantage to perform the entire process easily with affordable cost. We gave an overview of Digital Image Processing and the use of powerful visualization tools developed using LabVIEW and a few of the demonstrations were provided.

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