

Recognizing the flaw in polymers by Image processing

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Abstract-An innovative approach is proposed to sense the defect in the polymer bags by using the laser with alarm. In this method, a line laser is used to detect the fault in the polymer bags during the fabrication. The major problems faced by the polymer bags industries are, getting some defects due to inadequate flow of glue which produces a hole in the molded polymer during the production. The quality of polymer gets affected due to the hole, which leads to waste in the raw material and also increases the production cost. In the existing system, LED with Camera was used to find the defects. But this method is not sufficient to minimize the problem due to the limited intensity and scattering effect in LED. This technique reduces only 20% of defect and production cost. In the proposed system, a camera with 720p and a line laser with 650nm (red) wavelength are used instead of LED to reduce the defect and increase the construction cost. The proposed technique reduces up to 98% of shortcomings and also increases the quality of the production.

Index Terms--Object detection, Frame splitting, Red channel Extraction

I.INTRODUCTION

The primary generation of video supervision systems (1980's) is the conventional analog closed-circuit television (CCTV) network. In the system, analog video cameras are connected by concentric cables to surveillance screens for watching by human operators or the cameras may be connected to videotape recorders for archiving purposes.

The secondary generation video surveillance (1990's) replaced the videotape recorder with a digital video recorder (DVR) with the information archived on hard drives. More recent systems have

network connections so the video data can be stored on servers.

The following generation is an IP network system, where the data is continuously being transmitted over the network.

The massive quantity of information involved makes it impracticable to ensure argus-eyed monitoring by human operators for long periods of time because of monotony and fatigue. As a result, video feeds are sometimes archived for rhetorical purposes in the incident doubtful activities happen. In sort to support individual operators with recognition of necessary events in videos, an "intelligent" closed-circuit television is used. Such a system needs quick and sturdy ways for moving object detection, tracking, and event analysis.

In automatic video analysis object is detected by several techniques like active contour primarily based, dimensional primarily based etc., In real time security system, there are many several advanced systems offered. Those systems are largely embedded systems and far hardware specification should meet the efficient security system.

Many surveillance cameras are placed in security sensitive areas like banks, train stations, highways, and borders. The huge quantity of information concerned makes it impracticable to ensure argus-eyed watching by human operators for long periods of time.

In this project the machine is monitored, data bases about the machine are trained to the system. Video Camera is fitted near the machine where surveillances are needed.

Whenever variation in glue level is captured by the camera; it is immediately detected with the help of laser and processed to make the alarm to produce sound. Our proposed method detects the glue level in needed environments below dynamic illumination conditions and within the presence of background dynamics.

II.METHODOLOGY

The video is acquired by MATLAB drivers through the web camera. The videos are continuous form, so split the videos into frames by means of pixel size. Human understands color through wavelength sensitive sensory known as cones. There are three different kinds of cones, every with completely different sensitivity to light-weight of various wavelength. One sort of cone is especially sensitive to red light-weight, one to the green and one to the blue. Therefore thus color pictures stored in three absolutely diverse matrices.

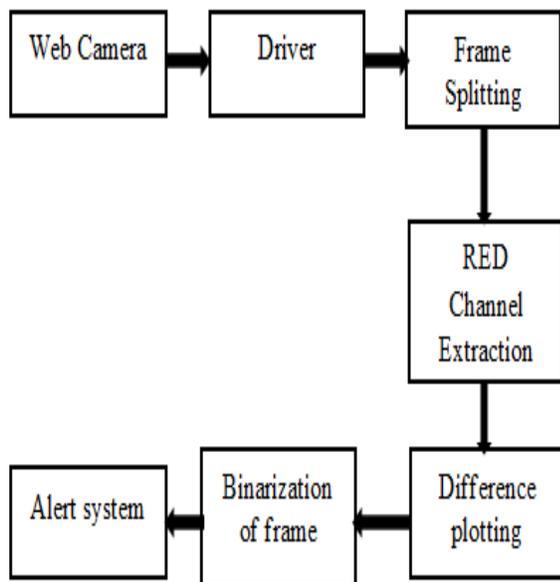


Fig. 1.Block diagram

RGB to gray scale conversion we have to require the RGB values for every pixel and build as output a single value reflective the brightness of that pixel. One such approach is to require the typical of the contribution from every channel.

After splitting the frames, the frames are compared with the previous frames. The previous frames are keeping within the workspace. Every time the previous frames will be varied. According to frame matching algorithm, differences between frames plot the variation between frames and build alert sound.

A. Live Video Acquisition

Live video acquisition is one library function provided by Math works MATLAB, to be employed in calling camera or web camera. The library may be employed in applications that are built using MATLAB. With the continual development of the Internet technology and network bandwidth, period of time streaming media transmission technology has become a hot analysis in recent years. The recognition of Wi- Fi/4G technology and therefore the rapid of increase of mobile hand-held device performance promote quality of the real-time streaming transmission technology.

Video live streaming system depends on streaming media technology and network technology to implement live through a collection, encoding, and publishing playback steps. The development of network communication technology and the popularity of mobile portable devices provide a new opportunity for the building of real-time video live streaming system.

a) Web camera

A webcam is a video camera that feeds or streams its image in a real time to or through a laptop and to the PC network. Once "captured" by the computer, the video stream may be saved, viewed or sent on to other networks via systems such as the internet, and emailed as an attachment. When it is sent to a remote location, the video may be saved and viewed there.

Unlike an IP camera (which connects using Ethernet or Wi-Fi), a webcam is generally connected by the USB cable/similar cable, or it is built into computer hardware, such as laptops. The LASER is used as a light source which emits a red color that falls on the machine. When there is a defect on the glue level, the red color will pass through the holes which are detected by the web camera.

b) Driver

To acquire the video it is necessary to install the drivers to detect Plug and Play hardware (like a webcam) and determine its Device Identification strings. Even though, it is possible by using MATLAB coding such as Trigger repeat, returned color space, Frame grab interval and it is an effective way to handle the installation drivers.

B. Frame Splitting

A digital image is an array of real or complex numbers represented by a finite number of bits. An image is given in the form of a transparency slide. Photograph or chart is first digitized and stored as a matrix of binary digits in computer memory.

In film and video production, split video is the visible division of the frame, historically in 0.5, however additionally in many co-occurring pictures, rupturing the illusion that the screen's frame could be a seamless read of reality, the same as that of the human eye. There could or might not be a certain borderline. Until the arrival of digital technology in the early 2010's, a split frame was accomplished.

There are three main frame rate standards in the TV and digital cinema business is 24p, 25p and 30 p. 30p is a progressive format and produces video at 30 frames per second. Shooting video in 30p mode gives no interlace artifacts but can introduce judder on image movement and on some camera pans.

For display, the image is stored in a rapid-access buffer memory which refreshes the monitor at 30frames/s to produce a visibly continuous display. **Frame rate**, (expressed in frames per second) is the frequency (rate) at that consecutive picture known as frames are displayed the associated animated display.

The term applies equally to film and video cameras, PC graphics, and motion capture systems. Frame rate may additionally be known as the frame frequency, and be expressed in hertz.

C. Red Channel Extraction

The RGB color model is an additive color model in which red, green, and blue light are added together in various ways to reproduce a broad array of colors. The name of the model comes from the initials of the three additive primary colors such as red, green and blue.

The main purpose of the RGB color model is for the sensing, illustration, display of images in electronic systems, like televisions and computers, though it is conjointly been utilized in typical photography. Before the electronic age, the RGB color model already had a solid theory behind it, based in human perception of colors.

RGB may be a device-dependent color model, since the color components and their response to the individual R, G, B levels vary from the manufacturer from a manufacturer, or perhaps within the same device over time. Therefore associate RGB value does not outline an equivalent color across devices without some kind of color management.

Typical RGB input devices are color TV and video cameras, image scanners and digital cameras. Typical RGB output devices are TV sets of varied technologies, laptop and transportable displays.

Among the RGB colors, Red is the color at the longer wavelengths end of the spectrum of visible light next to orange. Red color has a pre-dominant light wavelength of roughly 622-740 nm. Red is one of the additive primary colors of visible light which in red green blue (RGB) color systems are combined to create all the colors on a computer monitor or television screen.

From the RGB colors, the red channel gets extracted. In this, the Green and Blue are assigned as zeros, and the red is used to detect the pixel region. A region which has a pixel rate of 300 and above will be detected whereas lower than that will be neglected.

D. Difference Plotting

The n-th frame which is coming first will be assigned as A(1), second will be A(2) and so on. A(1) and A(2) are then compared and if there is a difference exists in that frame, white color will be displayed otherwise the cycle will be repeated continuously.

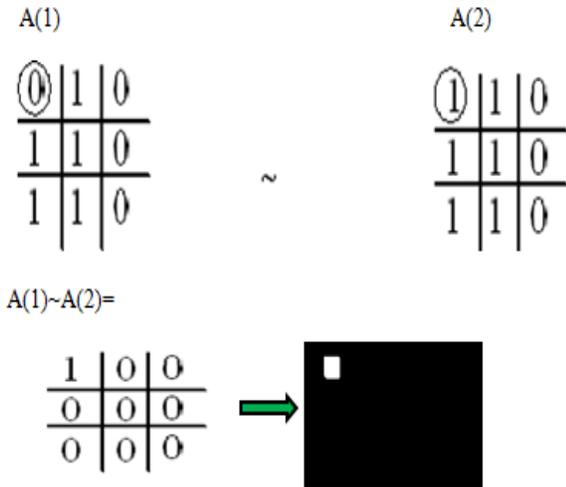


Fig. 2. Comparison of difference

where 1 denotes white and 0 denotes black.

E. Binarization Of Frame

A binary image is a digital image that has only two feasible standards for each pixel. Typically the two colors used for a binary image are black and white although any two colors will be used. The color used for the object(s) within the image is that the foreground color whereas the remainder of the image is that the background color.

In the document scanning business usually often brought up as bi-tonal. Binary pictures are also referred as bi-level or two-level. This suggests that every pixel is stored as a single bit (0 or 1).

The names black-and-white, B & W, monochrome or monochromatic are frequently use for this concept, but may also delegate any images that have only one sample per pixel, such as grayscale images.

6. Alert System

A Buzzer is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers include alarm devices, timers and confirmation of user input such as a mouse click. The system alerts using buzzer depending upon the result of difference plotting.

III.CONCLUSION

Thus, our proposed system results in the visibility of red color which indicates the insufficient flow of glue level. This implements the function of video capturing and finding the variation of color intensity. The system gets an alert when there is a change in intensity of red color. This can be found with the help of LASER which falls on the machine. It is very practical and portable in the actual operating environment. It reduces the wastages of polymer bags.

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