

# Survey on Basic Aspects and Text Detection in Digital Image Processing

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**Abstract**— Image processing topic is rapidly growing topic in today's technical world. The term image processing can be defined as a method or a program in which an image can convert into a digital form. After that many operations can perform on that image. it can extract some useful information from that image and also enhance the quality of the image. It is a type of signal allotment in which input is image, like video frame or photograph and output can be an image or any type of attribute that associated with that image. Basically image processing work on two dimensional image signals that could apply already on the image or we can apply according to the requirements. Image processing is useful in different business aspects as well as in medical industry.

**Keywords-** Image processing, digital, business, applicatiion, frame

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## I. INTRODUCTION

Digital image processing compromise with manipulation of the digital images by a digital computer. Digital image processing mainly focus on images. Digital image processing focuses on the developing of a computer system, which is able to perform processing on an image.

In Digital image processing digital image is fed as input, system process on it using different algorithm and gives suitable output. Most common example of this is Adobe Photoshop, which is widely used in the application related to the digital images.[1]

## II. WORKING OF IMAGE PROCESSING

In the above fig.1 a picture is clicked by a camera and it is sent to a digital system to eliminate the other details.



Figure 1: Working of the image processing

When we focus on the water drop to see it by zooming, the quality of that picture remains same as previous.

### III. WHY WE USE IMAGE PROCESSING ?

The main purpose of using image processing is categorized into 5 groups. Which are:

- **Measurement of pattern** – For measuring various objects in the image.
- **Image sharpening and restoration** – For creating better image.
- **Image Recognition** – For recognition an object in an image.
- **Image retrieval** – Seeking for the image interest..
- **Visualization** – For observing any object in the image, which is not visible.

### IV. TYPES OF IMAGE PROCESSING

Image Processing can be further divided into two parts: analog image processing and digital image processing.

#### **Analog image processing**

When image processing is done on the analog signal, it is called analog image processing. In this, the processing is done on the 2D analog signals. In this type of image processing the image is employed electrically means by varying electrical signals. Most common example of this is TV image.

But today Digital image processing is famous compare to analog image processing. It is dominating over the analog image processing due to its wider range of applications.

#### **Digital image processing**

When the image processing is done on the digital images, it is called digital image processing. It deals with

the developing digital system, which is performs operations on the digital image.

### V. IMAGES TYPES

What is image? The answer is simple: Image is a visual representation of any object. Today in the field of information technology the term image can be defined as:

- 1) Image is a visual representation of an object.
- 2) An image is a part of Random Access Memory (RAM), which copied to the other memory or storage location .
- 3) An image is a picture, which is created or can be copied and also can be stored in a electronic form. An image also can be described as raster graphics or vector graphics. When an image is stored in the raster form it is called a bitmap. And an image map is a file that contains information that is associated with the different locations on a specified image with the hypertext links.

There are many types of images with different features. Some other types with different color distribution etc. are:

#### **1. Black and White (B&W) Images**

BLACK AND WHITE images are the combination of the black & white in a range of producing in the shades of gray. A black and white image consist a number of pixels that holds a single number equivalent to the gray level image at a fixed location. [5]

#### **2. BINARY OR BIT LEVEL IMAGES**

Bit level representation of the pixels in an image is also known as the binary images or bit level images. We know that the states of a single bit defined as 0 or 1 or occasionally it is defined as: on or off. Each pixel in the

binary image must be one of the two states. Usually we used it as black color or white color. [5]

### 3. Color Images

In the color image a number of pixels with the combination of different colors like red, green and blue colors (RGB) are used. In this type of image many types of colors can be create by mixing of some amount of these colors (Red, Green and Blue).

### 4. Indexed Color Images

In the palette of colors there are consist 256 types of colors. So it is possible to create any particular type of color. This type of image is considered as Indexed Color Image. Represent a photographic image as indexed color image is typically complicated process because there is possibly different types of colors are available in the palette, so it is little bit complicated to represent a missing color. The other problem is when we combine two different color images that are use different palettes, can be create problems due to the limited number of availability of colors.

## VI. TEXT DETECTION IN THE IMAGES PROCESSING

The Text Detection method in the image processing is very sensitive to the scene-change detection. Also the text-frame selection is performed in the interval of two seconds for the caption of text in the eliminated scene frames. It is simple and efficient method for the video indexing applications that is only need key words from the video clips rather than the complete text. [4]

Text detection method in the complex background can be categorized into the bottom-up, machine learning based top-down methods and heuristic top-down methods.

### 1. Bottom-up methods

This method doesn't detect the text location directly. It segment images into the areas and it grouping characters into the words. These methods are very sensitive to the noise, size of the characters and the background patterns.

### 2. Sliding window methods

In this type of method a sliding window is used, which is moved on the complete image and it detect the text on the complete image. These methods are generally vigorous to the noise in a image, but the calculation complexity is very high in this method.

### 3. Heuristic top-down methods

In this method algorithms are used in image processing. The algorithm detects text in the images by using heuristic filters. After that they are segmented into the text & in the background areas. In other words we can say that the algorithm works in two parts, In the first part of the algorithm the text is detected in the image and in the second part of the algorithm, it applies bottom-up method on the image.

## VII. CONCLUSION

This paper gives a brief overview about the concepts of image and digital image processing. Digital processing is widely used in many fields. New techniques are continuously inventing day by day. Text detection is also a very useful application of image processing.

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