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A Study on Process of Digital Image Processing

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Abstract: *Digital image processing (DIP) involves the processing of two-dimensional pictures by a digital computer, converting them into binary digits for processing or display on a high-resolution monitor. Early systems were large computers, but recent advancements have led to frame grabbers that can convert a conventional PC into an image processing station. DIP has applications in remote sensing, industrial inspection, photo mechanics, robotics, and medical image processing. Image processing aims to visually enhance or statistically evaluate aspects of an image, enhancing perception and vision without adding information content, by developing and implementing necessary processing means.*

Keywords: Digital, image, process, computer

I. INTRODUCTION

Digital image processing (DIP) is the broad term for how a digital computer modifies a two-dimensional image. A program called Digital Image Processing (DIP) is used to alter digital images on a computer system. Additionally, it is utilized to improve the photographs and extract some crucial information from them. A digital image is an image composed of picture elements, also known as pixels, each with finite, discrete quantities of numeric representation for its intensity or grey level DIP concentrates on creating a computer system capable of processing images. A digital image is used as the system's input, which is processed by the system utilizing effective algorithms to produce an image. The most common example is Adobe Photoshop. Image processing is a combination of computer science, math, and engineering that looks at how to manipulate and analyse digital images. These images can be anything from photos to satellite images, medical scans, and anything else that's been digitized. The main purpose of image processing is to improve, look at, and extract data from these images for different uses.

When images were originally transmitted by submarine cable between London and New York, one of the first industries in which digital images were used was the newspaper industry. A picture could now be sent across the Atlantic in less than three hours thanks to the early 1920s introduction of the Bart Lane cable picture transmission system. Previously, it would take more than a week .Specifically designed printing equipment encoded images for cable transmission, then decoded and rebuilt them at the other end. Some of the original issues with enhancing the visual quality of these early digital images had to do with the distribution of intensity levels and the choice of printing manufacturers. In reality, because processing digital images needs so much computing power and storage, advancements in the field of digital image processing have been reliant on the growth of digital computers and related technologies like data storage, display, and transmission. A finite number of elements, each with a location and a value, make up the digital image. These components are referred to as pixels, picture elements, and image elements. A constituent of a digital image is identified by its pixels. Obtaining an image of the text-containing area, processing that image, extracting the individual characters, characterizing the characters in a way that can be processed by computers, and identifying those individual characters are the steps involved. Digitization of images. In the late 1960s and early 1970s, astronomy, distant Earth resource surveys, and medical imaging all benefited from the development of digital image processing techniques. One of the most notable was the development of computerized axial tomography (CAT), often known as CT, in the early 1970s.

II. REVIEW OF LITERATURE

Riseman and co. talked about how to split functions from different scenes at the same time. They suggested that this could be made easier by doing a rough segmentation of a fuzzy image using edge assessment, so that big regions can be separated and processed separately. The problem with this is that it could lead to a maze of inconsistencies that can't be

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easily sorted out. Plus, there's a lot of extra work that needs to be done on the serial machine. But if you look at it from the future, with parallel hardware and real time, it looks pretty good.

Bloch proposed the main fuzzy approaches to classify spatial relations, including topology (set of relations, contiguity) and metric (distance, relative orientation). Real objects usually do not have exact symmetry and it is necessary to deal with approximate symmetries. Many works quantify the degree of symmetry, often using distance-based symmetry metrics. In a cloud situation, this is much less important. In reality, there is no longer a rigid membership; Fluency helps us deal with the gradual transition between objects and meaning. Therefore, we should claim to be robust when analyzing interactions between two objects.

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2.1 OBJECTIVE OF THE PAPER

- To study the concept of Digital Image.
- To understand the simple image techniques.
- To evaluate image in the form of features.
- To obtain information about the image compression and segmentation techniques.

III. RESEARCH METHODOLOGY

The research is based on secondary data. Secondary data collected from magazine, books, and internet, etc.

Research in digital image processing involves various stages and methodologies to manipulate and analysis images digitally. And hereby I have collected some of the information through reading books, magazine, etc. Digital image processing research often involves a combination of mathematical, statistical, and computational techniques, and it's important to stay up-to-date with the latest advances in the field.

IV. FINDINGS

Learned how to improve photo quality.
Learned How to processing Medical images.
Understood Simple Image Techniques.
Cleared the concept of Digital Image Processing.

V. SUGGESTIONS

The understanding different image compression techniques, such as JPEG and PNG, and how they reduce the size of images while maintaining visual quality.

Learn about colour models (RGB, HSV, and CMYK) and colour processing techniques for tasks such as colour correction, enhancement, and segmentation.

The use of digital image processing in medical imaging, which includes tasks such as image registration, image fusion, and disease diagnosis.

Understand how convolutional neural networks (CNN) and other deep learning techniques are used for various image processing tasks such as image classification, object detection, and image generation

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VI. CONCLUSION

In conclusion, digital imaging is a dynamic and evolving field that plays a vital role in our modern world. Its applications are widespread and it continues to evolve with the integration of artificial intelligence and machine learning. As technology evolves, even more exciting developments and applications in the field of digital image processing can be expected.

Digital imaging is a transformative field with a wide range of applications and interdisciplinary connections. It continues to shape our world by improving the understanding of visual information, improving technology and promoting creative and scientific development. As technology advances and new challenges emerge, digital image processing remains a dynamic and important area of research and application.

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