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IMAGE SEGMENTATION TECHNIQUES

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Abstract:-**Image segmentation can be defined as in which we divide the image into multiple parts in the form of pixels. Image segmentation is an refer to partition of an image into different regions that are homogenous or similar and inhomogeneous in some characteristic's like color, intensity or texture. At present there are many different algorithm available for image segmentation and each has their own advantages and purpose.**

***Keywords*— Segmentation, image processing.**

I. INTRODUCTION

Memory segmentation is the division of a computer's primary memory into segments or sections. In a computer system using segmentation, a reference to a memory location includes a value that identifies a segment and an offset within that segment. Segments or sections are also used in object files of compiled programs when they are linked together into a program image and when the image is loaded into memory. Segmentation is a memory management scheme that supports this user view of memory. A logical address space is a collection of segmentation. each segment has a name and a length. Image segmentation an important topic in the field of digital image processing, the purpose of image segmentation is to partition the image into essential regions with respect to the appropriate location. For the segmentation we need the images. But the images are either in form of black and white or color. The aim of image segmentation is the domain independent partition of the image into a set of regions, which are visually district and uniform with respect some property, such as grey level, texture or color. Segmentation can be considered the first step and key issue in object recognition, scene understanding and image understanding.

II. HARDWARE IMPLEMENTATION

In a system using segmentation, computer memory addresses consist of a segment id and an offset within the segment. A hardware memory management unit (MMU) is responsible for translating the segment and offset into a physical memory address, and for performing checks to make sure the translation can be done and that the reference to that segment and offset is permitted. Each segment has a length and set of permissions associated with it. A process is only allowed to make a reference into a segment if the type of reference is allowed by the permissions, and if the offset within the segment is within the range specified by the length of the segment. Otherwise, a hardware exception such as a segmentation fault is raised. Segments may also be used to implement virtual memory. In this case each segment has an associated flag indicating whether it is present in main memory or not. If a segment is accessed that is not present in main memory, an exception is raised, and the operating system will read the segment into memory from secondary storage. Segmentation is one method of implementing memory protection. Paging is another, and they can be combined. The size of a memory segment is generally not fixed and may be as small as a single byte. Segmentation has been implemented in several different ways on different hardware, with or without paging.

III. SEGMENTATION WITHOUT PAGGING

Associated with each segment is information that indicates where the segment is located in memory— the *segment base*. When a program references a memory location the offset is added to the segment base to generate a physical memory address. Associated with each segment is information that indicates where the segment is located in memory— the *segment base*. When a program references a memory location the offset is added to the segment base to generate a physical memory address.

IV. SEGMENTATION WITH PAGGING

Instead of an actual memory location the segment information includes the address of a page table for the segment. When a program references a memory location the offset is translated to a memory address using the page table. A segment can be extended simply by allocating another memory page and adding it to the segment's page table. Instead of an actual memory location the segment information includes the address of a page table for the segment. When a program references a memory location the offset is translated to a memory address using the page table. A segment can be

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extended simply by allocating another memory page and adding it to the segment's page table.

V. IMAGE SEGMENTATION

Image Segmentation is a process of subdividing an image into its constituent's parts or objects in the image i.e. set of pixels, pixels in a region are similar according to some homogeneity criteria such as color, intensity or texture so as to locate and identify boundaries in an image. Purpose of dividing an image is to further analyze each of these objects present in the image to extract some high level information. Application of image segmentation consists of airport security system, object recognition, criminal investigation, computer graphics, medical imaging, MPEG-4 video object (VO) segmentation, satellite images (roads, forests) etc. Different Segmentation Techniques or algorithms have been proposed in the literature. Selection of a particular technique or algorithm over another is based on the image type and nature of the problem.



Image segmentation is a process of image processing and understanding.it is defined as the process of dividing the image into parts based on homogeneity.the purpose of image processing is to make the representation of an image simpler into something's that is more meaningful and easier to understand.

- Image segmentation is an aspect of image processing.
- Image segmentation is a computer vision process.
- Image segmentation is the first step in image analysis.

VI. WHY SEGMENTATION IS USEFUL?

- Segmentation accuracy determines the eventual success or failure of computerized analysis procedure.
- Improvement of pictorial information for human interpretation /perception.
- Mapping and measurement-automatic analysis of remote sensing data from satellites to identify and measure regions of interest.e.g. petroleum.

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