



DECIPHER THE PHYSICAL CONTENTS OF AN IMAGE OR A SEQUENCE OF IMAGES FOR BETTER ACCURACY

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Abstract:

Closely related to image processing are computer graphics and computer vision. In computer graphics, images are manually made from physical models of objects, environments, and lighting, instead of being acquired (via imaging devices such as cameras) from natural scenes, as in most animated movies. Computer vision, on the other hand, is often considered high-level image processing out of which a machine/computer/software intends to decipher the physical contents of an image or a sequence of images (e.g., videos or 3D full-body magnetic resonance scans).

Keywords: Computer Vision & Level Image Processing.

1. Introduction:

Raster images are stored in a computer in the form of a grid of picture elements, or pixels. These pixels contain the image's color and brightness information.

- Image editors can change the pixels to enhance the image in many ways. The pixels can be changed as a group, or individually, by the sophisticated algorithms within the image editors.
- The domain of this article primarily refers to bitmap graphics editors, which are often used to alter photographs and other raster graphics. However, vector software, such as Adobe Illustrator, CorelDRAW, Xara Designer Pro or Inkscape, are used to create and modify vector images, which are stored as descriptions of lines, Bézier curves, and text instead of pixels.
- It is easier to rasterize a vector image than to vectorize a raster image; how to go about vectorizing a raster image is the focus of much research in the field of computer vision. Vector images can be modified more easily, because they contain descriptions of the shapes for easy rearrangement. They are also scalable, being rasterizable at any resolution.



Figure (1): Uncropped Image from Camera

2. Silhouetted Images to Vector Graphics:

Many graphics applications are capable of merging one or more individual images into a single file. The orientation and placement of each image can be controlled.

- When selecting a raster image that is not rectangular, it requires separating the edges from the background, also known as silhouetting. This is the digital analog of cutting out the image from a physical picture.
- Clipping paths may be used to add silhouetted images to vector graphics or page layout files that retain vector data. Alpha compositing, allows for soft translucent edges when selecting images.
- There are a number of ways to silhouette an image with soft edges, including selecting the image or its background by sampling similar colors, selecting the edges by raster tracing, or converting a clipping path to a raster selection.
- Once the image is selected, it may be copied and pasted into another section of the same file, or into a separate file. The selection may also be saved in what is known as an alpha channel.
- A popular way to create a composite image is to use transparent layers. The background image is used as the bottom layer, and the image with parts to be added are placed in a layer above that.
- Using an image layer mask, all but the parts to be merged are hidden from the layer, giving the impression that these parts have been added to the background layer. Performing a merge in this manner preserves all of the pixel data on both layers to more easily

Conclusion:

More recent tool in digital image editing software is the image slicer. Parts of images for graphical user interfaces or web pages are easily sliced, labeled and saved separately from whole images so the parts can be handled individually by the display medium. This is useful to allow dynamic swapping via interactivity or animating parts of an image in the final presentation.

References:

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