Image processing

In electrical engineering and computer science, **image processing** is any form of signal processing for which the input is an image, such as a photograph or video frame; the output of image processing may be either an image or, a set of characteristics or parameters related to the image. Most image-processing techniques involve treating the image as a two-dimensional signal and applying standard signal-processing techniques to it.

Image processing usually refers to digital image processing, but optical and analog image processing also are possible. This article is about general techniques that apply to all of them. The *acquisition* of images (producing the input image in the first place) is referred to as imaging.

**Typical operations**

- Euclidean geometry transformations such as enlargement, reduction, and rotation
- Color corrections such as brightness and contrast adjustments, color mapping, color balancing, quantization, or color translation to a different color space
- Digital compositing or optical compositing (combination of two or more images), which is used in film-making to make a “matte”
- Interpolation, demosaicing, and recovery of a full image from a raw image format using a Bayer filter pattern
- Image registration, the alignment of two or more images
- Image differencing and morphing
- Image recognition, for example, may extract the text from the image using optical character recognition or checkbox and bubble values using optical mark recognition
- Image segmentation
- High dynamic range imaging by combining multiple images
- Geometric hashing for 2-D object recognition with affine invariance
Applications

- Computer vision
- Optical sorting
- Augmented Reality
- Face detection
- Feature detection
- Lane departure warning system
- Non-photorealistic rendering
- Medical image processing
- Microscope image processing
- Morphological image processing
- Remote sensing

Further reading


External links

- Image processing algorithms, implementations and demonstrations [5]
- Computer Vision Online [6] A good source for source codes, software packages, datasets, etc. related to image processing
- IPRG [8] Open group related to image processing research resources

References

[1] http://books.google.co.in/books?id=smBw4-xvrIC&lpg=PP1&ots=FVFYaOATEF&dq=image%20processing%20ajoy%20ray&pg=PP1#v=onepage&q=false
[8] http://iprg.co.in
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