Image Analysis

Image analysis or **imagery analysis** is the extraction of meaningful information from images; mainly from digital images by means of digital image processing techniques.[1] Image analysis tasks can be as simple as reading bar coded tags or as sophisticated as identifying a person from their face.

Computers are indispensable for the analysis of large amounts of data, for tasks that require complex computation, or for the extraction of quantitative information. On the other hand, the human visual cortex is an excellent image analysis apparatus, especially for extracting higher-level information, and for many applications — including medicine, security, and remote sensing — human analysts still cannot be replaced by computers. For this reason, many important image analysis tools such as edge detectors and neural networks are inspired by human visual perception models.

Digital Image Analysis or Computer Image Analysis is when a computer or electrical device automatically studies an image to obtain useful information from it. Note that the device is often a computer but may also be an electrical circuit, a digital camera or a mobile phone. It involves the fields of computer or machine vision, and medical imaging, and makes heavy use of pattern recognition, digital geometry, and signal processing. This field of computer science developed in the 1950s at academic institutions such as the MIT A.I. Lab, originally as a branch of artificial intelligence and robotics.

It is the quantitative or qualitative characterization of two-dimensional (2D) or three-dimensional (3D) digital images. 2D images are, for example, to be analyzed in computer vision, and 3D images in medical imaging. The field was established in the 1950s—1970s, for example with pioneering contributions by Azriel Rosenfeld, Herbert Freeman, Jack E. Bresenham, or King-Sun Fu.