

Machine Vision

Machine vision (MV) is the technology and methods used to provide imaging-based automatic inspection and analysis for such applications as automatic inspection, process control, and robot guidance, usually in industry.

Machine vision is a term encompassing a large number of technologies, software and hardware products, integrated systems, actions, methods and expertise.

Machine vision as a systems engineering discipline can be considered distinct from computer vision, a form of computer science. It attempts to integrate existing technologies in new ways and apply them to solve real world problems.



The imaging device (e.g. camera) can either be separate from the main image processing unit or combined with it in which case the combination is generally called a smart camera or smart sensor. When separated, the connection may be

made to specialized intermediate hardware, a custom processing appliance, or a frame grabber within a computer using either an analog or standardized digital interface (Camera Link, CoaXPress). MV implementations also use digital cameras capable of direct connections (without a framegrabber) to a computer via FireWire, USB or Gigabit Ethernet interfaces.



While conventional (2D visible light) imaging is most commonly used in MV, alternatives include multispectral imaging, hyperspectral imaging, imaging various infrared bands, line scan imaging, 3D imaging of surfaces and X-ray imaging. Key differentiations within MV 2D visible light imaging are monochromatic vs. color, frame rate, resolution, and whether or not the imaging process is simultaneous over the entire image, making it suitable for moving processes.

Source: Internet