MJ Engineering and Consulting

Since 1988

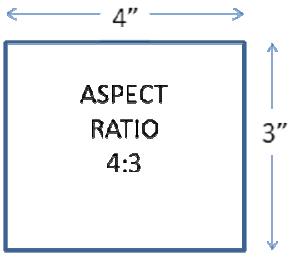
MJ ENGINEERING

653 McCorkle Blvd, Unit F.
Westerville, Ohio 43082

MACHINE VISION TERMINLOLOGY

- **Aperture** - In context of photography or machine vision, aperture refers to the diameter of the aperture stop of a photographic lens. The aperture stop can be adjusted to control the amount of light reaching the film or image sensor.

- **Aspect ratio** (image). The aspect ratio of an image chip, the common aspect ratio is 4:3 (Horizontal:Vertical) In the past this was the typical pc monitor ratio, 640:480, 1024:763 and so on.



- **Camera Image Size**. The Image size id the physical size of the element in the camera. There are several common sizes available; this is needed to match a lens to the camera.

Element Size	Horizontal Size	Vertical Size
1	0.504	0.378
2/3	0.346	0.260
1/2	0.252	0.189
1/3	0.189	0.142
1/4	0.142	0.106

- **Charge-Coupled Device**. A charge-coupled device (CCD) is a sensor for recording images, consisting of an integrated circuit containing an array of linked, or coupled, capacitors. CCD sensors and cameras tend to be more sensitive, less noisy, and more expensive than CMOS sensors and cameras

- **CMOS**. ("see-moss") stands for complementary metal-oxide semiconductor, is a major class of integrated circuits. CMOS imaging sensors for machine vision are cheaper than CCD sensors but more noisy.

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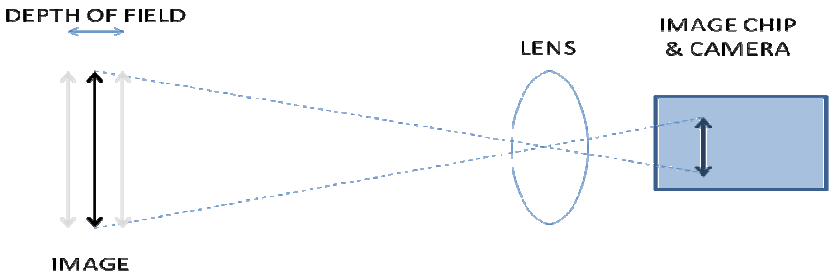
- **Contrast**. In visual perception, contrast is the difference in visual properties that makes an object (or its representation in an image) distinguishable from other objects and the background.

- **C-Mount**. Standardized adapter for optical lenses on CCD - cameras. C-Mount lenses have a back focal distance 17.5 mm vs. 12.5 mm for "CS-mount" lenses. A C-Mount lens can be used on a CS-Mount camera through the use of a 5 mm extension adapter. C-mount is a 1" diameter, 32 threads per inch mounting thread (1"-32UN-2A.)

- **CS-Mount**. Same as C-Mount but the focal point is 5 mm shorter. A CS-Mount lens will not work on a C-Mount camera. CS-mount is a 1" diameter, 32 threads per inch mounting thread.

- **Depth of Field**. In optics, particularly photography and machine vision, the depth of field (DOF) is the distance in front of and behind the subject which appears to be in focus. This will allow the distance from the lens to the target object to vary slightly without the need for re-focusing the lens.



- **Depth Perception**. DP is the visual ability to perceive the world in three dimensions. It is a trait common to many higher animals. Depth perception allows the beholder to accurately gauge the distance to an object.

Questions or comments?
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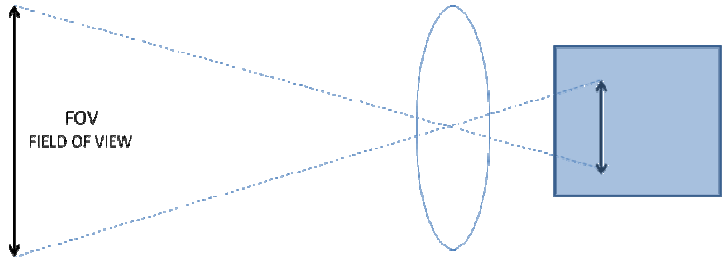
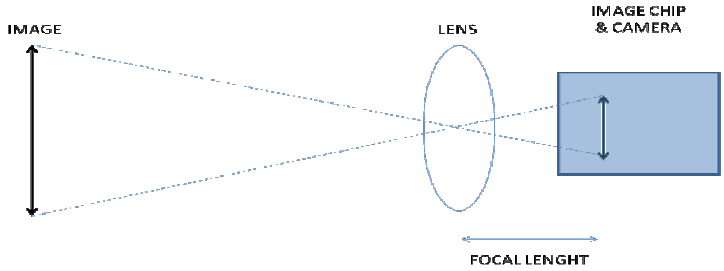
- **Field of View**. The field of view (FOV) is the part which can be seen by the machine vision system at one moment. The field of view depends from the lens of the system and from the working distance between object and camera.



- **Focal Length**. This is the distance from the lens to the camera's imager. It is always specified in millimeters. Focal length determines the relationship between working distance and angle of view. In other words; how big of an area you can see at a given distance.



- **Optical Character Recognition**. Abbreviated as OCR, involves computer software designed to translate images of typewritten text (usually captured by a scanner) into machine-editable text, or to translate pictures of characters into a standard encoding scheme representing them in (ASCII or Unicode). This is the ability of a vision system to translate an image of text or numbers to machine-editable text.

- **Optical Character Verification**. Abbreviated as OCV. This is the ability of a machine vision system to verify that an image contains a specific string of text or numbers. A very common application for this function is verification of printed date and product codes.

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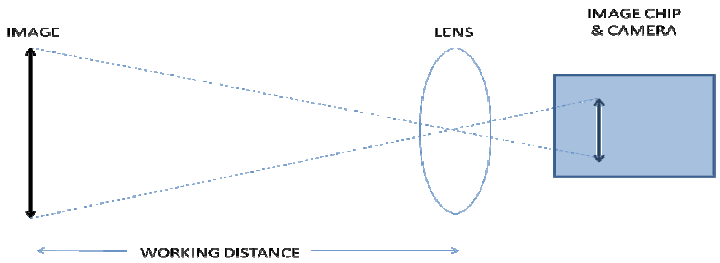
- **Region of interest**. A Region of Interest, often abbreviated ROI, this is a selected sub-portion of the image that is to be evaluated. Typically the size of the ROI is directly related to the processing speed. (Larger region = more pixels to evaluate)

- **Smart camera**. A smart camera is an integrated machine vision system which, in addition to image capture circuitry, includes a processor, which can extract information from images without need for an external processing unit, and interface devices used to make results available to other devices

- **Working Distance**. The distance from the camera to the target object(s) of interest.



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