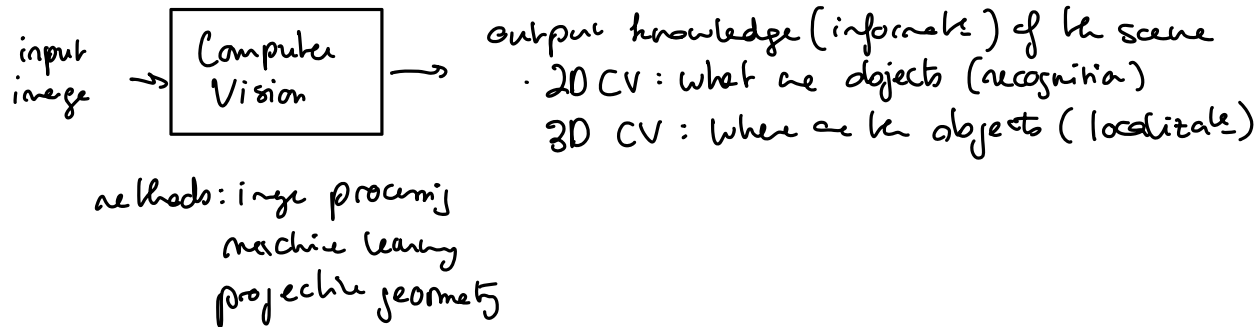# Computer Vision vs. Image Processing vs. Computer Graphics

Computer Vision:

Definition: Computer vision is the field concerned with enabling computers to interpret and understand the visual world,
similar to the way humans do. It ivolves the acquisition,
processing, analysis, and understanding of digital images and videos.
• The process to extract information from images using a computer (software).
• A system that performs the tasks that human vision does. These tasks can go from the detecti understanding of a whole, complex scene (see Fig. 1. and Fig. 2).

input image → [Computer Vision] → output knowledge (informate) of the scene
· 2D CV: what are objects (recognition)
3D CV: where are the objects (localizate)

methods: image procumig
machine leaning
projective geometry

Objective: The primary goal of computer vision is to extrakt meaningful information from visual data, such as recognizing objects, scenes, or patterns, and making decisions or taking actions based on that information. Applications include facial recognition, object detection and tracking, autonomous vehicles, medical image analysis, and more.

Methods: Computer vision techniques often involve image processing algorithms, machine leaming, deep learning, and other artificial intelligence approaches to interpret and analyze
visual data.

Image Processing:

Definition: Image processing is the manipulation of digital images using various algorithms and techniques to enhance or extract information from the images.
Objective: The main objective of image processing is to improve the quality of images, extract useful information, or perform some specific operation on images for further analysis or
visualization.
Methods: Image processing techniques include filtering, enhancement,
segmentation,
registration, compression, and restoration. These techniques can be used for various applications such as medical imaging, satellite imaging, digital photography, and more.

Computer Graphics:

Definition:
Computer graphics involves the creation| manipulation and rendering
of visual content using computers. It deals with generating visual representations of real or.
imaginary objects and scenes.
Objective: The primary goal of computer graphics is to create realistic or stylized images, nimations, and visual effects for various purposes, including entertainment, design, simulation, and visualization.
Methods: Computer graphics techniques include modeling,(creating 3D models of objects) rendering (generating 2D images or animations from 3D models), animation (simulating motion and behavior), and visualization (presenting data visually).
These techniques are used in applications such as video games, movies, virtual reality, computer-aided design (CAD), and scientific visualization.