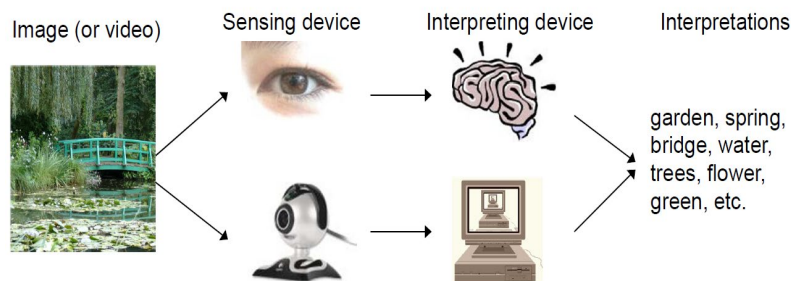# Handout 01 Introduction to Computer Vision

1. Basic Concepts

(1) What is computer vision?
- It aims to bridge the gap between physical pixels and semantic "meanings";
- It has close relationship to many other disciplines;
- Vision is a kind of measurement device;
- Vision aims to figure out the semantic information from the scene.

Draw an analogy between human vision and machine vision

(2) Why computer vision is difficult?
- Viewpoint variation;
- Illumination variation;
- Scale variation;
- Shape deformation;
- Occlusions among objects;
- Background clutter;
- Motion;
- Intra-class variation;

(3) Typical applications related to CV
- Visual search
- 3D street view
- Photo synthesis
- 3D reconstruction
- Autonomous vehicles
- Optical character recognition
- Video analysis
- Face detection and face recognition
- Biometrics
- Smile detection
- Motion capture for movie industry
- Robotics
- Image guided surgery

- Any others?