

Introduction

- What IS computer vision?

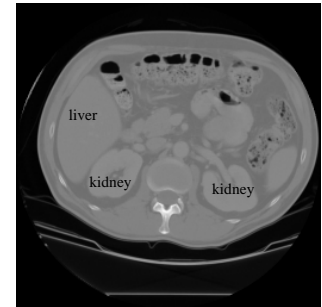
the analysis of digital images by a computer

- Where do images come from?

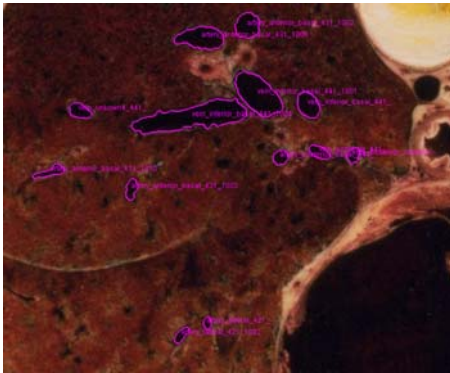
Applications

- Medical Imaging

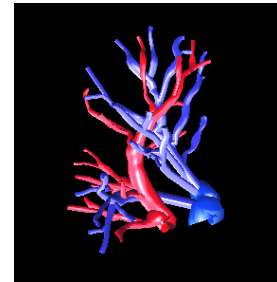
CT image of a patient's abdomen



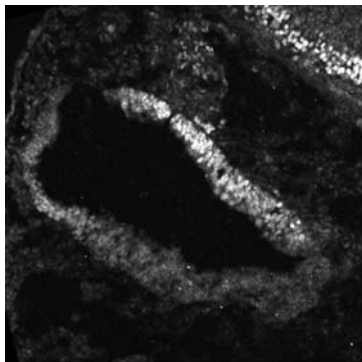
Visible Man Slice Through Lung



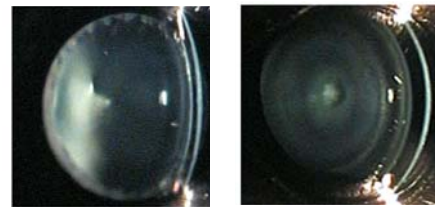
3D Reconstruction of the Blood Vessel Tree



Slice of a Chicken Embryo's Inner Ear



CBIR of Mouse Eye Images for Genetic Studies



Robotics

- 2D Gray-tone or Color Images

“Mars” rover



- 3D Range Images

What am I?

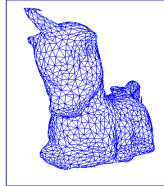


Image Databases:

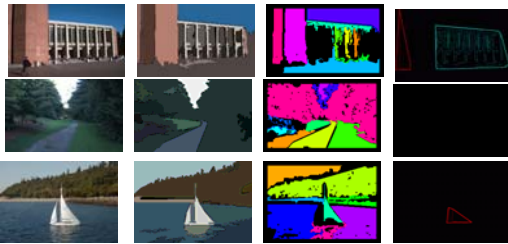
Images from my Ground-Truth collection.



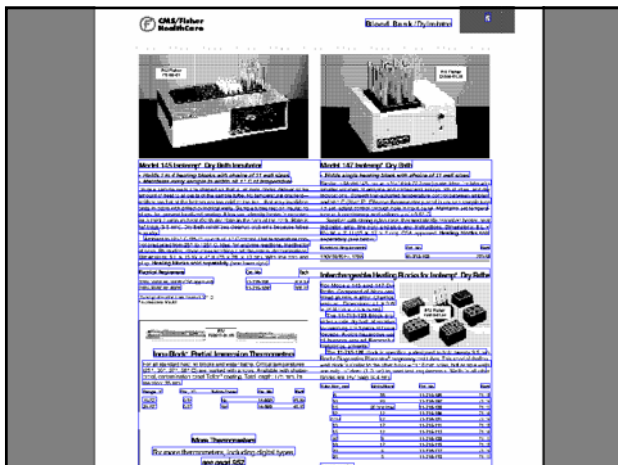
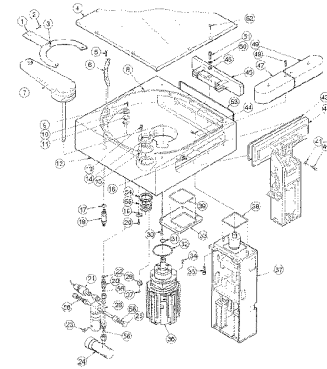
What categories of image databases exist today?

Abstract Regions for Object Recognition

Original Images Color Regions Texture Regions Line Clusters

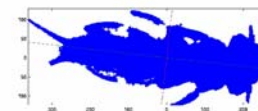


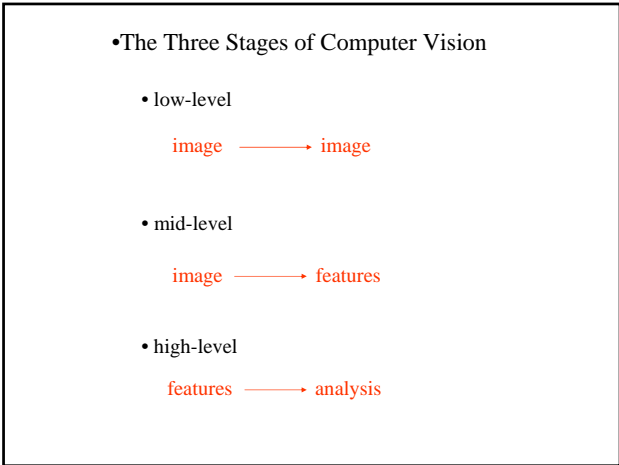
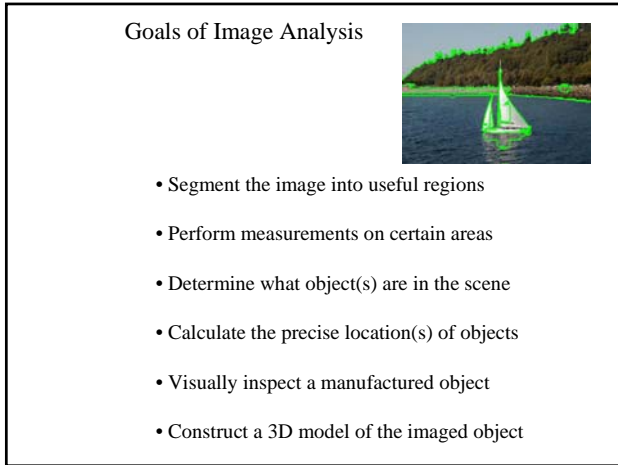
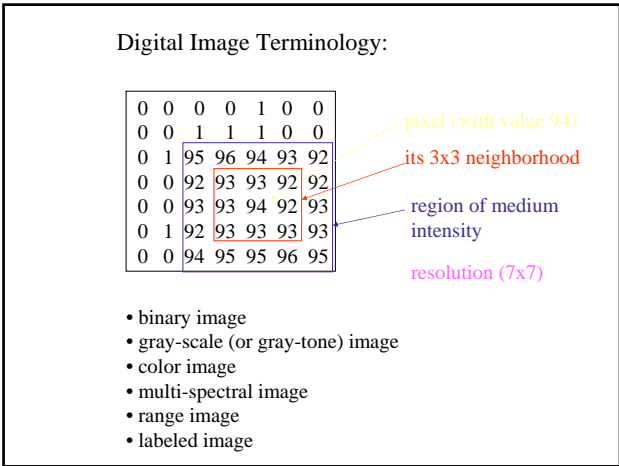
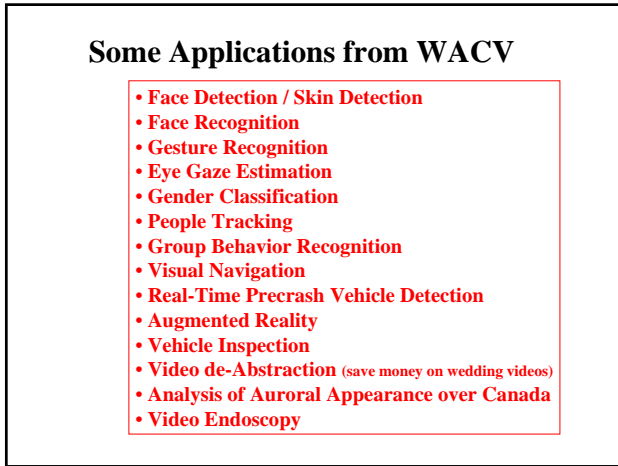
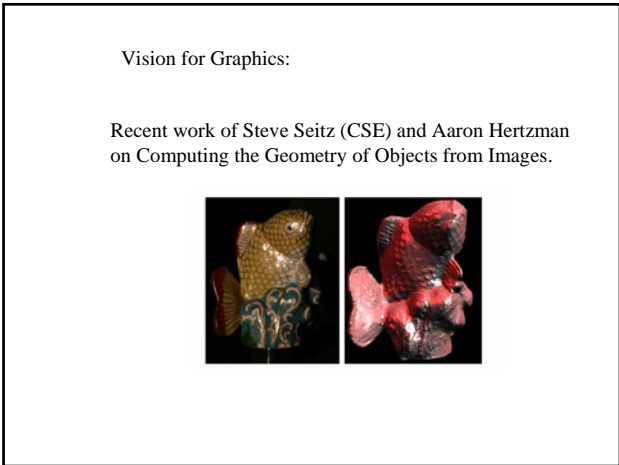
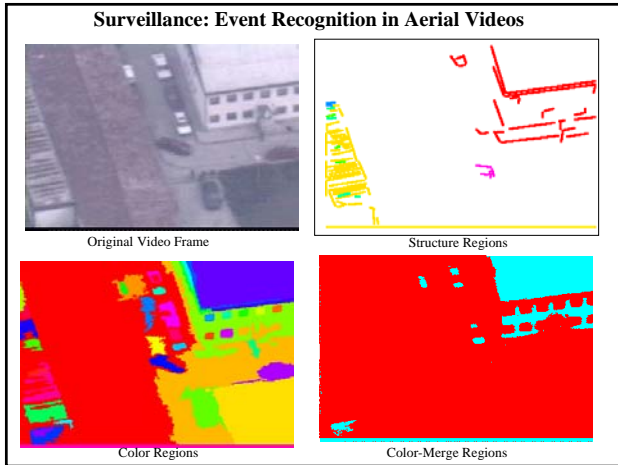
Documents:

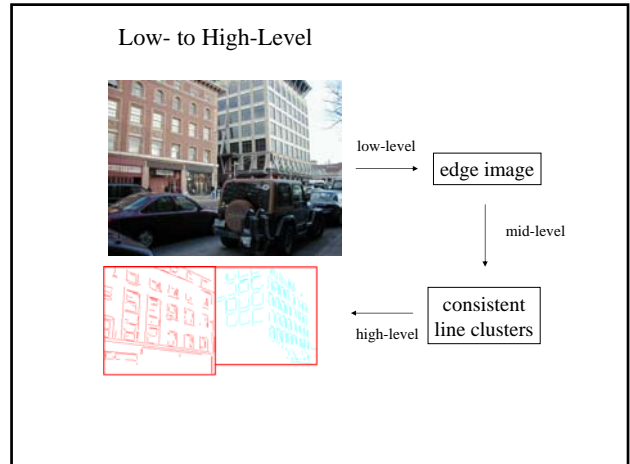
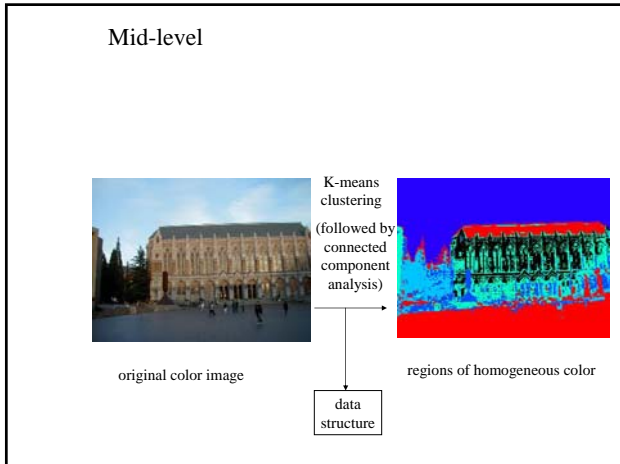
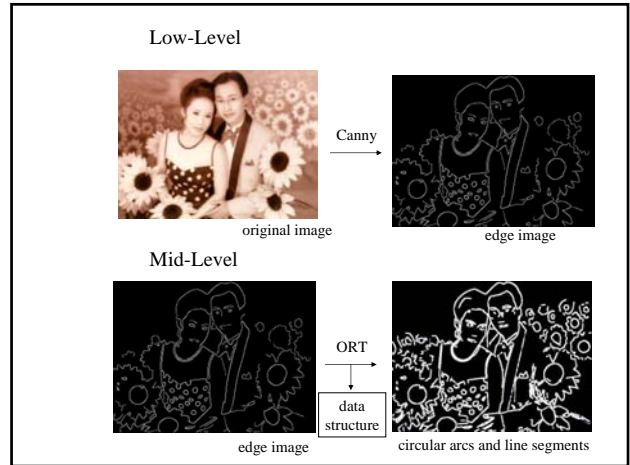


The screenshot shows a technical document with several tables and diagrams. At the top, there are logos for 'GMS/Fluor' and 'Wood-Block/Systems'. Below these are two diagrams of a device. The main body of the page contains several tables with columns for 'Part', 'Material', 'Quantity', and 'Unit'. There are also some paragraphs of text interspersed between the tables.

Insect Recognition for Ecology







Difficulty of Computer Vision

- Computer vision is far from completely solved.
- There have been many successful systems used in real applications.
Like what?
- There are lots of things that humans can do for which vision programs don't come close to success.
Can you name some?