Overview of Topics

Detection of Image Intensity Changes

CS 332 Visual Processing in Computer and Biological Vision Systems

Detection of Image Intensity Changes
Detecting intensity changes...

... in the human visual system

... in computer vision systems

Binocular stereo

Stereo images displayed as a color anaglyph

NASA mobile robot with stereo cameras
Stereo processing in biological systems

3D shape from shading

Prados & Faugeras, 2005
Analysis of visual motion

Analysis of color

Edwin Land’s color mondrian experiments
Visual recognition

Face recognition

AR Face Database
Applications of computer vision systems

- Biometrics and forensics:
  - fingerprint identification, face recognition

- Intelligent vehicles
  DARPA Grand Challenge
  November, 2007

- Video surveillance

Medical applications of computer vision

- Medical Image Analysis
  CT, MR, X-ray – no matter what source and resolution. HALCON processes 8/16/32 bit integer and float images.

  - Cell nuclei counting
    - automatically counts cell nuclei in images with a low signal-to-noise ratio
  - Angiography
    - supports vascular diagnostics by providing accurate measurements enhancing the physician’s evaluation

  - Electrophoresis
    - automatically distinguishes and counts bacteria colonies

  - Image analysis
    - surgical planning
Content-based image retrieval