Outline

- Announcement:
  - Final Exam, Thursday, June 12, 3:00-6:00, WLH 2205

- Today
  - Midterm answers
  - Epipolar geometry
  - Rectification
  - Matching

Midterm

- High: 98
- Low: 32
- Mean: 65.8

Binocular Stereopsis: Mars

Given two images of a scene where relative locations of cameras are known, estimate depth of all common scene points.

An Application: Mobile Robot Navigation


Commercial Stereo Heads

The INRIA Mobile Robot, 1990.

Trinocular stereo

Binocular stereo
Stereo can work well

Need for correspondence

Triangulation

Two Approaches

• A) From each image, process “monocular” image to obtain cues.
• B) Establish correspondence between cues.
  • Directly compare image regions between the two images.

Human Stereopsis: Binocular Fusion

How are the correspondences established?

Julesz (1971): Is the mechanism for binocular fusion a monocular process or a binocular one?
  • There is anecdotal evidence for the latter (camouflage).

Random Dot Stereograms
Random Dot Stereograms

A Cooperative Model (Marr and Poggio, 1976)

Where does a point in the left image match in the right image?