Landmarks and Environmental Modeling
Chairs: Peter Allen, Julio Rosenblatt

Mobile robot navigation using self-similar landmarks
Amy J. Briggs, Daniel Scharstein, Darius Braziunas, Cristian Dima
and Peter Wall
Middlebury College

- Reliable vision-based navigation using artificial landmarks
- Self-similar patterns detectable under wide range of views
- Detection at 36 frames per second without specialized hardware
- First practical real-time navigation system using visual landmarks

Integration of Range and Image Sensing for Photorealistic 3D Modeling
I. Stamos and P. Allen
Columbia University

- Geometric and photometric correct 3-D modeling
- Segmentation of range data, fusion of range w/ image data
- Experiments with real buildings
- Complete system for 3-D model acquisition
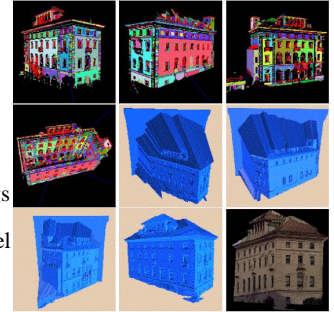
Design and implementation of Onbody Real Time Depth Map Generation System
S. Kagami, K. Okada, M. Inaba and H. Inoue
The University of Tokyo

- Realtime Depthmap Generation Using onbody PC only
- Recursive Correlation and Online Consistency Checking
- Realtime Calculation on 128x128 with 32 Search Length
- Real-World Experiments using Several Robots
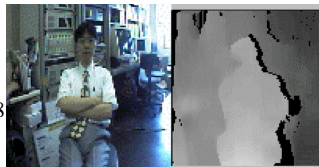
Landmark Selection for Terrain Matching
C. F. Olson
California Institute of Technology

- Problem: Landmark selection for accurate localization
- Motivation: Autonomous localization for Mars rovers
- Technique: Estimate uncertainties using error model
- Result: Improvement in both correctness and precision
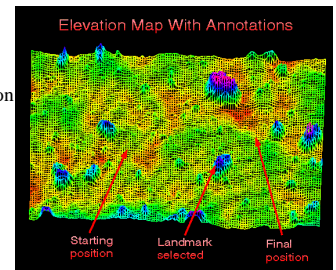
3-D Interpretation of Sewer Circular Structures
M. Kolesnik[1] and G. Baratoff[2]
[1]Schloss Birlinghoven, Augustin Germany and [2]University of Ulm, Germany

- Vision-based distance computation is important for orientation of an autonomous robot.
- Algorithm for distance computation in the sewer utilizing one calibrated camera is presented.
- Two types of sewer circular structures are extracted and interpreted.
- 3D interpretation method gives information about the location and orientation of the sewer inspecting robot.
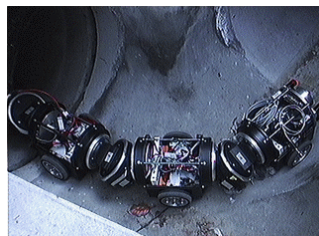
Object Recognition by Subscene Graph Matching
Wen-Jing Li and Tong Lee
The Chinese University of Hong Kong

- Recognition of occluded articulated objects
- Matching Graphs of partitioned scenes by Hopfield Network
- Matched scissors with different angles of opening
- Locating objects with similar local structures