

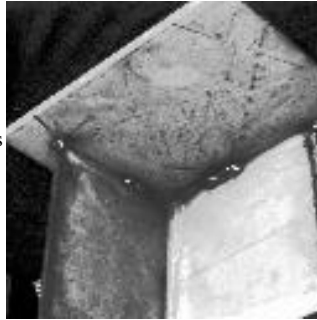
Visual Servoing 1

Chairs: Peter Allen, Minoru Asada

Visual Servoing from Lines

Nicolas Andreff, Bernard Espiau and Radu Horaud
INRIA Rhone-Alpes

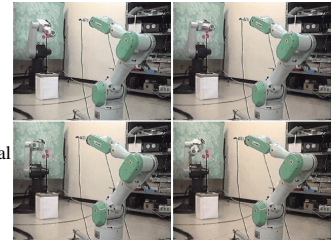
- Positioning a camera with respect to a set of lines
- Explicit control law using binormalized Plucker coordinates of a line
- Global convergence theorem
- Application to the orthogonal trihedron case



Adaptive Binocular Visual Servoing for Independently Moving Target Tracking

M. Asada, T. Tanaka and K. Hosoda
Osaka University

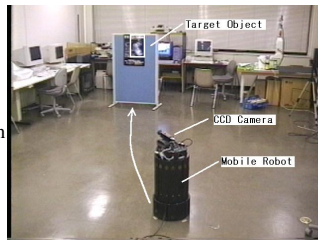
- Unknown Moving Object Tracking based on Adaptive Visual Servoing
- Stereo Epi-polar Constraint and Virtually Stationary Target
- Better Performance Than Conventional Adaptive Visual Servoing
- A Proposal of One Extension of AVS and Success of Application



Visual Tracking using Dynamic Transition in Groups of Affine Transformed Templates

Ken Ito and Shigeyuki Sakane
Chuo University

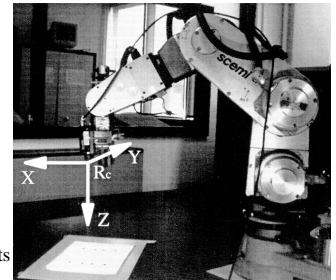
- View-based visual tracking of an object in 3D environment
- Affine transformed templates generated from geodesic domes
- Visual tracking tasks in manipulation and robot navigation
- The system can cope with the changes of the template's appearance in the 3D environment.



Robust Vision Based 3D Trajectory Tracking Using Sliding Mode Control

P. Zanne, G. Morel and F. Plestan
Universite of Strasbourg 1

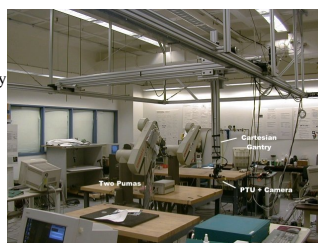
- Conventional 3D visual servoing suffers from a lack of robustness
- Study of the effect of camera calibration errors on the 6 DOF pose reconstruction
- Robustness to bounded parametric errors using sliding mode control
- Accurate 6DOF tracking experiments under weak calibration



Joint Coupled Compensation Effects in Visually Servoed Tracking

P. Oh and P. Allen
Columbia University

- Problem: Robotically monitor a large assembly workcell with a hybrid 5-DOF robot
- Approach: Partition degrees-of-freedom; visually servo pan-tilt unit and kinematically servo cartesian gantry
- Results: Joint-coupling improves tracking performance by reducing lag
- Conclusions: Fast bandwidth DOF, when visually servoed, physically act as lead compensators for slower joints



Controlling Robots With Two Cameras: How to Do it Properly

B. Lamiroy, B. Espiau, N. Andreff and R. Horaud
INRIA Rhone-Alpes

- Develop sound framework for stereo visual servoing
- Constraint minimization handling epipolar geometry
- Higher convergence precision and smoother movements
- Stereo is more robust and more flexible than mono

