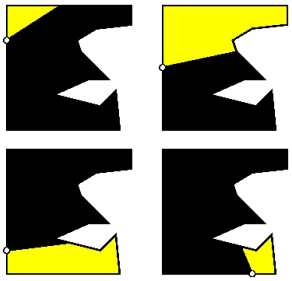
Target Tracking
Chairs: Gregory Hager, A. Zelinsky

Pursuit-Evasion Using Beam Detection
B. Simov, G. Slutzki and S. M. LaValle
Iowa State University

- We present an algorithm for detecting an evader in a polygonal region
- The algorithm provides a schedule for single or multiple pursuers each of them equipped with a beam

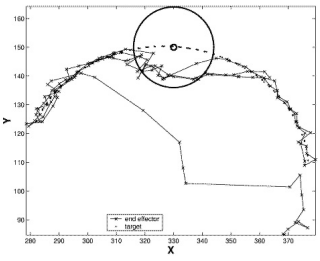


Tracking Techniques for Visual Servoing Tasks
D. Kragic and H. Christensen
Royal Institute of Technology

- Region tracking for manipulation tasks.
- Graddient vs. correlation based approach.
- Different motion models (T, R, A) and comparison results.
- Adaptive model selection as a future goal.

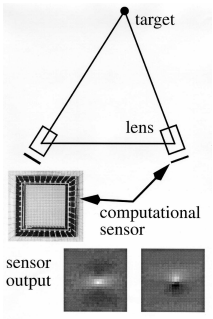
Uncalibrated Target Tracking with Obstacle Avoidance
J. A. Piepmeier[1] G. V. McMurray[2], A. Pfeiffer[3] and H. Lipkin[3]
[1]U.S. Naval Academy, [2]Georgia Tech Research Institute, and
[3]Georgia Institute of Technology

- Moving target tracking while avoiding an obstacle in path.
- Uses quasi-Newton method and RLS Jacobian estimation.
- Obstacle avoidance demonstrated with 2-link robot.
- Objective function used to effect desired behavior.



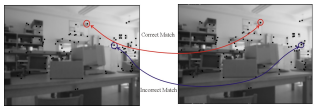
Visual Tracking with Subpixel Resolution Using an Analog VLSI Computational Sensor
Z. Lu and B. E. Shi
Hong Kong University of Science and Technology

- Active binocular vision system performs target tracking
- Computational sensors provide visual feedback at 250Hz
- Subpixel resolution of target motion via Gabor filter phase
- Estimation of 3D target motion via triangulation



3D Motion Tracking of a Mobile Robot in a Natural Environment
P. Saeedi, P. Lawrence and D. Lowe
University of British Columbia

- To estimate the real-time 3D ego-motion of the camera from 2D images.
- Motion is estimated by tracking reconstructed 3D world features over the time.
- An average translational error of 15
- The algorithm demonstrates that this camera motion tracking method is feasible in unknown environments.



Visual Hand Posture Tracking in a Gripper Guiding Application
Fabienne Lathuiliere and Jean-Yves Herve
Ecole Polytechnique de Montreal

- Visual hand posture tracking in a gripper guiding application
- Kinematic hand model and pose estimation using a video camera and colored markers
- Validation on synthetic and real hand sequences and teleoperated gripping simulation
- Real-time hand pose tracking system improving grasp control