

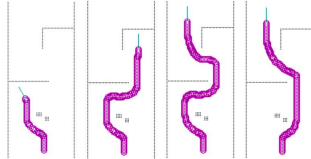
Mapping and Localization 2

Chairs: Hugh Durrant-Whyte, Bijoy K. Ghosh

VFH*: Local obstacle Avoidance with look-ahead verification

Iwan Ulrich and Johann Borenstein
The University of Michigan

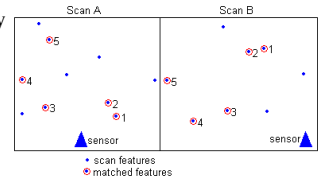
- Real-Time Obstacle Avoidance for Mobile Robots
- Improvement to VFH (Vector Field Histogram)
- Look-Ahead Verification with A* Search
- Better Performance Even with Short Search Depth



Data Association for Mobile Robot Navigation: A Graph Theoretic Approach

T. Bailey, E. Nebot, J. Rosenblatt and H. F. Durrant-Whyte
University of Sydney

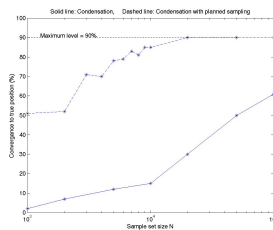
- Want feature mapping robust to vehicle pose errors.
- Use the invariant relative geometry between features.
- Experiment using range laser with indoor & outdoor vehicles.
- Obtained reliable association, reject false and dynamic features, using no vehicle model.



Experiments on Augmenting Condensation for Mobile Robot Localization

P. Jensfelt, O. Wijk, D. Austin and M. Andersson
Royal Institute of Technology

- Feature based mobile robot localization
- Augmenting condensation with planned sampling
- A substantial reduction in sample set size
- Localization in large scale environments can be handled with a small sample set size



Improving the accuracy of dynamic localization systems using RTK GPS by identifying the GPS latency

D. Bouvet and G. Garcia
Institut de Recherche en Cybernetique de Nantes (IRCyN)

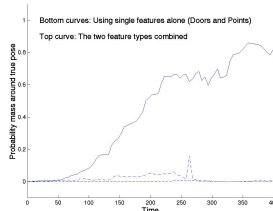
- Motivation: using RTK GPS for precise localization of outdoor vehicles
- The unknown GPS latency depends on the number of visible satellites
- Observability analysis helps define the protocol to identify the latency
- Validation on a mobile robot



Feature Based Condensation for Mobile Robot Localization

P. Jensfelt, D. Austin, O. Wijk and M. Andersson
Royal Institute of Technology

- Feature based mobile robot localization
- A comparison between different features for localization
- Use features extracted from different sensors
- More than one feature type is needed



Line Segment Based Map Building and Localization Using 2D Laser rangefinder

L. Zhang and B. K. Ghosh
Washington University, St. Louis

- Systematical and efficient mapping and localization with laser
- Line segment based closed map and localization
- Accurate map, fast local and global localization (4ms, 20ms)
- Proposed techniques are good for real applications

