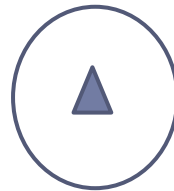


Localization with a particle filter

Daniel Eberts
Timo Rokitte

Motivation

- ▶ Kalman-Filter cannot resolve ambiguities
- ▶ Example: 2 beta markers at different positions

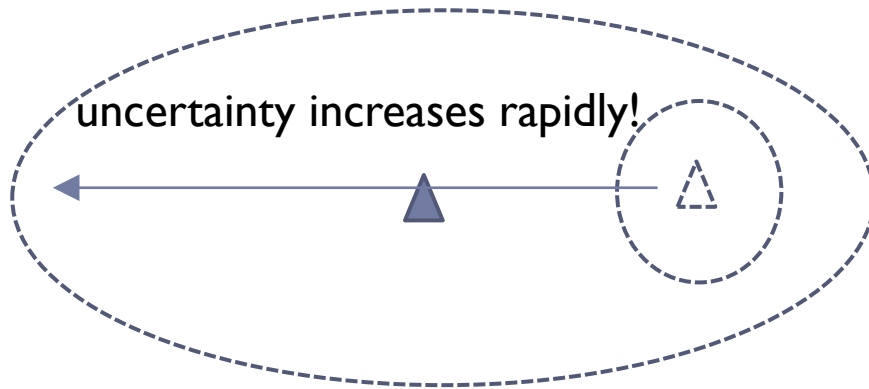


β

▶ Marker I

Motivation

- ▶ Kalman-Filter cannot resolve ambiguities
- ▶ Example: 2 beta markers at different positions



β

β

▶ Marker 2 appears

Marker 1 (predicted)

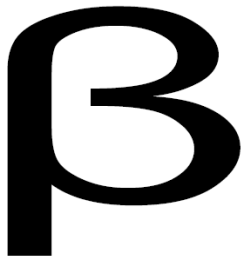
Problem specification

- ▶ How to deal with identical markers at different positions?
- ▶ Our problem is a localization problem which cannot be solved with a Kalman filter
- ▶ In the real world, markers or characteristics of objects are not unique



Approach

- ▶ Resolve ambiguities by tracking multiple hypotheses about the robot's position → Particle filter



▶ Marker 2 appears

Marker 1 (predicted)

Implementation Plan

Task Mode	Task Name	Duration	Start	Finish	Predecessors
	Project Specification	2 dys	Thu 14.06.12	Fri 15.06.12	
	Project Proposal presentation	0 dys	Thu 21.06.12	Thu 21.06.12	1
	Mid-term presentation	0 dys	Thu 05.07.12	Thu 05.07.12	5
	Final presentation	0 dys	Thu 19.07.12	Thu 19.07.12	14
	Specification	4 dys	Mon 18.06.12	Thu 21.06.12	
	Prediction Step	2 dys	Mon 18.06.12	Tue 19.06.12	1
	Update Strategy	2 dys	Wed 20.06.12	Thu 21.06.12	6
	Implementation	11 dys	Fri 22.06.12	Fri 06.07.12	5
	Record bag file wit identical markers	1 dy	Fri 22.06.12	Fri 22.06.12	7
	Prediction Step	4 dys	Mon 25.06.12	Thu 28.06.12	9
	Update Strategy	4 dys	Fri 29.06.12	Wed 04.07.12	10
	RVIZ visualization	2 dys	Thu 05.07.12	Fri 06.07.12	10;11
	Testing and Optimization	6 dys	Mon 09.07.12	Mon 16.07.12	8
	Demo preparation	2 dys	Tue 17.07.12	Wed 18.07.12	13

Thank you for your attention!

Questions?