Short Introduction of project

KARIS

(Kleinskalige Autonomes Redundantes Intralogistiksystem)

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Overview

- **KARIS**: A *autonomous* transport robot system
- **Goal**: deploy hundreds of these elements to solve tasks in *intra-logistics*
  - Material flow task between stations
- **Problems to solve**
  - Mapping
  - Localization
  - Task Assignment
  - Motion Planning
  - Safe Control
  - ...

KARIS System
KARIS Robot

Size: 50x50x35 cm. Weight: 50 kg. Payload: 60 kg.
Multi-robot path planning

• Decoupled and prioritized path planning
  – Planning the paths for the individual robots
  – If a conflict of path is detected, a priority scheme will be used to re-plan the path of the robot with lower priority
  – Problem: not complete

• Adaptive Road Map Optimization (ARMO)
  – The road map adapts itself with the change of environment in real time
  – Optimizes the road map w.r.t. to environmental constraints and demand for transportation tasks
  – Successfully tested up to 100 robots
If you are interested in ...  

• Task assignment  
• Multi-robot path planning  
• Multi-agent system  
• 3D simulation  

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