Logion - A Robot Which Collects Rocks

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Introduction

• MART Robotic Team
• Design of robot Logion
Agenda

• Design overview
• Software design and algorithms
• Brain
• Localization
• Moving
• Opposition avoidance
Design overview

- PC Motherboard
- Hardware modules (MCU with sensors and actuator drivers)
- Infrared + ultrasonic localization
- Power source: Sealed Pb accumulators
- Motors with integrated gearbox 50:1 + encoders (6000 steps per wheel revolution)
- Max speed ~ 0.7 m/s
- Compass
Logion
SOFTWARE DESIGN

• Universal robot
• Layered, object oriented design
• Hardware abstraction
• Software-hardware mapping
Smart layer: Brain

- State automat
- Thread based workers
- State aware triggers
Smart layer: Brain

- State automat
- Thread based workers
- State aware triggers
Localization

- Monte-Carlo
- Odometry
- Compass
- Beacons
  - Reliability (encoded signal)
  - Accuracy (5 cm)
  - Opponent detection
Localization

Idea

Robot view
Moving

• Ideas:
  • continuous smooth curves
  • adaptable for moving obstacles

• Solution:
  • Hermite curves
Opponent avoidance

- Opponent detection
- Decision making
- Route planning
  - Adding checkpoint
  - Dynamic adjusting
  - Removing checkpoint
Thank you for your time

Questions?

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