Lab 5
Threshold- and Market-based Algorithms
Ali Marjovi
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Content

- Task Allocation
  - Threshold-based Algorithms
  - Market-based Algorithms

- Case Study: “Event Handling”
  - Robots, Events in environment
  - Problem: assigning robots to handle events (tasks)
Threshold-based Algorithms

- Stimulus → Response
  (sensors → actuators)
- Adaptive thresholds
Market-based Algorithms (1)

• Economics:
  – Robots negotiate over events
  – To find a ‘cost-effective’ solution

• Requires:
  – Communication
  – Planning
  – Etc…
Market-based Algorithms (2)

- **Auctions**
  - Centralized (can be partially distributed)
- **Bidding**
  - A robot determines the cost & benefit of performing a task
- **Local objective function**
  - The robot with the best offer wins (is assigned)
- **Global objective function**
- **What factors influence how a robot bids?**