Highly Heterogeneous Teams

April 3, 2003

Class Meeting 22

(USF)

(USC)

Questions?

- Remember: Assignment #5 Due on Tuesday

In What Ways Can Robots be Heterogeneous?

- Heterogeneous in behaviors:
  - Same robots, but with different software/behavior capabilities
- Heterogeneous in performance quality:
  - Can perform same task, but with different performance qualities (recall box pushing with R-2 and/or Genghis)
- Heterogeneous in size:
  - Similar capabilities, but at different size scales
- Heterogeneous in morphology:
  - Completely different physical structure
- Heterogeneous in cognition:
  - Reflexive vs. deliberative
- Others?

“Highly Heterogeneous” Teams

- Multi-Robot Team Tasks:
  - Distributed in:
    - Space
    - Time
    - Functionality

Primary focus of Highly Heterogeneous Teams

What do we mean by “Highly Heterogeneous”?

- Recall “Hierarchic Social Entropy” measure?

- Here, speaking of robot team members, all (or most) of which are very different from each other morphologically

Student Paper Presentation

- Chapter 9, *Robot Teams* text, “Marsupial Robots”, by Robin Murphy

- Presented by Shakhina Pulatova

Student Paper Presentation

- Chapter 12, *Robot Teams* text, “Experiments with Cooperative Aerial-Ground Robots”, by Gaurav Sukhatme, et. al.

- Presented by Jeff Barnett

Video of Aerial/Ground Robotic Teaming

(from USC)

What are the issues in “Highly Heterogeneous” Robots?

- What is impact on task allocation?
- How does idea of “role” fit in?
- What is the impact on fault tolerance?

Next Time

- Cooperative localization, mapping, and exploration