CS344M
Autonomous Multiagent Systems

Prof: Peter Stone

Department or Computer Science
The University of Texas at Austin

Good Afternoon, Colleagues

Good Afternoon, Colleagues

Are there any questions?

Logistics

- Office hours

Logistics

- Office hours
- Reading responses

Logistics

- Office hours
- Reading responses
- Programming assignment
  - How's it going?

Logistics

- Office hours
- Reading responses
- Programming assignment
  - How's it going?
  - Important: 3D code is only for this class

Logistics

- Office hours
- Reading responses
- Programming assignment
  - How's it going?
  - Important: 3D code is only for this class
- Talks in the department:

Logistics

- Office hours
- Reading responses
- Programming assignment
  - How's it going?
  - Important: 3D code is only for this class
- Talks in the department:
  - Luke Zettlemeyer, Friday at 11am (2.302)
  - University of Washington
  - "Learning to Follow Orders: Reinforcement Learning for Mapping Instructions to Actions"

Logistics

- Next week's readings up
  - Multiagent Systems – an overview
    - Another overview (optional)
  - Pushing Brooks' approach to MAS

Logistics

- Next week's readings up
  - Multiagent Systems – an overview
    - Another overview (optional)
  - Pushing Brooks' approach to MAS
  - An early successful RoboCup team

Logistics

- Next week's readings up
  - Multiagent Systems – an overview
    - Another overview (optional)
  - Pushing Brooks' approach to MAS
  - An early successful RoboCup team
  - Free-form response

Logistics

- Next week's readings up
  - Multiagent Systems – an overview
    - Another overview (optional)
  - Pushing Brooks' approach to MAS
  - An early successful RoboCup team
  - Free-form response

- Thursday's class to be led by Katie and Patrick

Writing

- Direct, articulate responses
  - Thesis sentence
  - Supporting argument
  - Demonstrate that you know what you're saying

Writing

- Direct, articulate responses
  - Thesis sentence
  - Supporting argument
  - Demonstrate that you know what you're saying

One way that TCA departs from Rodney Brooks' design principles is that TCA employs a central control module. TCA's central component routes messages to the various connected modules and maintains control information. Brooks' designs, on the other hand, connected perception directly to actions, bypassing any form of central control and also any central representation of the world.

Reactive vs. deliberative (3 senses)

- Respond in a timely fashion
- No complex respresentation
- No state at all (respond to current percepts)

Reactive vs. deliberative (3 senses)

- Respond in a timely fashion
- No complex respresentation
- No state at all (respond to current percepts)

From the book:

- $action : \mathcal{P} \mapsto \mathcal{A}$

- Decision based entirely on the present

Reactive vs. deliberative (3 senses)

- Respond in a timely fashion
- No complex respresentation
- No state at all (respond to current percepts)

From the book:

- $action : \mathcal{P} \mapsto \mathcal{A}$

- Decision based entirely on the present
  - True of Brooks' "reactive" agents?

Brooks' Goals

Brooks' Goals

- Autonomous mobile agents that are seen as intelligent
- No interest in applications
- Timely, robust, do something

Brooks' Goals

- Autonomous mobile agents that are seen as intelligent
- No interest in applications
- Timely, robust, do something
- How differ from 3T goals?

Brooks' Goals

- Autonomous mobile agents that are seen as intelligent
- No interest in applications
- Timely, robust, do something
- How differ from 3T goals?
  - What are their stances towards modeling biology?
  - Which is more biologically plausible?

Brooks' Goals

- Autonomous mobile agents that are seen as intelligent
- No interest in applications
- Timely, robust, do something
- How differ from 3T goals?
  - What are their stances towards modeling biology?
  - Which is more biologically plausible?

Subsumption Architecture

Brooks' Goals

- Autonomous mobile agents that are seen as intelligent
- No interest in applications
- Timely, robust, do something
- How differ from 3T goals?
  - What are their stances towards modeling biology?
  - Which is more biologically plausible?

Subsumption Architecture

(journal article, page 2)

Merkwelt

Merkwelt

- *Merkwelt* $\sim$ "perceptual world"
- Every agent has its own *Merkwelt*.

Merkwelt

- *Merkwelt* $\sim$ "perceptual world"
- Every agent has its own *Merkwelt*.
- Why should robots use a representation based on our *Merkwelt*?
- Do we know our own *Merkwelt*?

Modules

"When researchers working on a particular module get to choose both the inputs and the outputs that specify the module requirements I believe there is little chance the work they do will fit into a complete intelligent system."

Does this apply to 3T?

Could the 3T apps have used subsumption?

- Why or why not?