

CS344M

Autonomous Multiagent Systems

Patrick MacAlpine

Department of Computer Science
The University of Texas at Austin

Good Afternoon, Colleagues

Are there any questions?

Good Afternoon, Colleagues

Are there any questions?

- Cobot now?
- How cobot dealt with multiple users at the same time?
- Learning in marimba playing robot?
- rtNEAT in more games?
- Largest sacle applies to video games?

Logistics

- Final reports due today before class
- Just one point off if turned in at my office by Friday at 5pm
 - Only if you're in class today!

Logistics

- Final reports due today before class
- Just one point off if turned in at my office by Friday at 5pm
 - Only if you're in class today!
 - ...and no penalty if you also visit the writing center!

Logistics

- Final reports due today before class
- Just one point off if turned in at my office by Friday at 5pm
 - Only if you're in class today!
 - ...and no penalty if you also visit the writing center!
- Missing assignments/readings no longer accepted for credit

Logistics

- Final reports due today before class
- Just one point off if turned in at my office by Friday at 5pm
 - Only if you're in class today!
 - ...and no penalty if you also visit the writing center!
- Missing assignments/readings no longer accepted for credit
- Fill out the online course survey for +1 point extra credit

Logistics

- Final reports due today before class
- Just one point off if turned in at my office by Friday at 5pm
 - Only if you're in class today!
 - ...and no penalty if you also visit the writing center!
- Missing assignments/readings no longer accepted for credit
- Fill out the online course survey for +1 point extra credit
- RoboCup informational meeting Monday 12/7 at 12 PM in GDC 3.516

Discussion

- Should agents model emotions?

The Turing Test

- Loebner Prize

The Turing Test

- Loebner Prize
- BotPrize (video)

The Turing Test

- Loebner Prize
- BotPrize (video)
 - Coleman
 - Milford
 - Moises
 - Lawrence
 - Clifford
 - Kathe
 - Tristan
 - Jackie

The Turing Test

- Loebner Prize
- BotPrize (video)
 - Coleman
 - Milford
 - Moises
 - Lawrence
 - Clifford
 - Kathe
 - Tristan
 - Jackie
- Botting in games

Course recap

- You've read.

Course recap

- You've read.
- You've reacted and formed opinions.

Course recap

- You've read.
- You've reacted and formed opinions.
- You've spoken (or at least will at the class tournament).

Course recap

- You've read.
- You've reacted and formed opinions.
- You've spoken (or at least will at the class tournament).
- You've written.

Course recap

- You've read.
- You've reacted and formed opinions.
- You've spoken (or at least will at the class tournament).
- You've written.
- You've coded for a task with no right answer and no way of knowing that you're done.

Course recap

- You've read.
- You've reacted and formed opinions.
- You've spoken (or at least will at the class tournament).
- You've written.
- You've coded for a task with no right answer and no way of knowing that you're done.

Do you like CS research?

What have we covered?

1. **Autonomous agents:**

What is an agent?

What have we covered?

1. **Autonomous agents:**
2. **Agent architectures:**

What is an agent?
Subsumption, 3T

What have we covered?

1. **Autonomous agents:**
2. **Agent architectures:**
3. **Multiagent Systems:**

What is an agent?

Subsumption, 3T

Overview, subsumption

What have we covered?

- | | |
|---------------------------------------|------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |

What have we covered?

- | | |
|---------------------------------------|------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |

What have we covered?

- | | |
|--|------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |

What have we covered?

- | | |
|--|----------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |
| 7. Applications: | KIVA, intersection traffic |

What have we covered?

- | | |
|--|----------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |
| 7. Applications: | KIVA, intersection traffic |
| 8. Game theory: | Nash equilibrium |

What have we covered?

- | | |
|--|----------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |
| 7. Applications: | KIVA, intersection traffic |
| 8. Game theory: | Nash equilibrium |
| 9. Statistical measurements: | t-tests |

What have we covered?

- | | |
|--|----------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |
| 7. Applications: | KIVA, intersection traffic |
| 8. Game theory: | Nash equilibrium |
| 9. Statistical measurements: | t-tests |
| 10. Distributed rational decision making: | voting... |

What have we covered?

- | | |
|--|----------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |
| 7. Applications: | KIVA, intersection traffic |
| 8. Game theory: | Nash equilibrium |
| 9. Statistical measurements: | t-tests |
| 10. Distributed rational decision making: | voting... |
| 11. Auctions: | FCC spectrum auctions, TAC |

What have we covered?

- | | |
|--|-------------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |
| 7. Applications: | KIVA, intersection traffic |
| 8. Game theory: | Nash equilibrium |
| 9. Statistical measurements: | t-tests |
| 10. Distributed rational decision making: | voting... |
| 11. Auctions: | FCC spectrum auctions, TAC |
| 12. Agent modeling: | coaching, RMM, tracking teams |

What have we covered?

- | | |
|--|-------------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |
| 7. Applications: | KIVA, intersection traffic |
| 8. Game theory: | Nash equilibrium |
| 9. Statistical measurements: | t-tests |
| 10. Distributed rational decision making: | voting... |
| 11. Auctions: | FCC spectrum auctions, TAC |
| 12. Agent modeling: | coaching, RMM, tracking teams |
| 13. Multiagent learning: | multiagent RL |

What have we covered?

- | | |
|--|-------------------------------|
| 1. Autonomous agents: | What is an agent? |
| 2. Agent architectures: | Subsumption, 3T |
| 3. Multiagent Systems: | Overview, subsumption |
| 4. Communication and Teamwork: | ACLs, Joint Intentions |
| 5. RoboCup case studies | |
| 6. Swarms and ant-based approaches: | “Go to the Ant” |
| 7. Applications: | KIVA, intersection traffic |
| 8. Game theory: | Nash equilibrium |
| 9. Statistical measurements: | t-tests |
| 10. Distributed rational decision making: | voting... |
| 11. Auctions: | FCC spectrum auctions, TAC |
| 12. Agent modeling: | coaching, RMM, tracking teams |
| 13. Multiagent learning: | multiagent RL |
| 14. Entertainment agents | chatbots, music bots |
-

The original question

- What is an agent?

Course recap

- I've enjoyed teaching you

Course recap

- I've enjoyed teaching you
- I've been impressed by the levels of discussions we've had in class

Course recap

- I've enjoyed teaching you
- I've been impressed by the levels of discussions we've had in class
- I'm happy with the progress in writing that many of you have made

Course recap

- I've enjoyed teaching you
- I've been impressed by the levels of discussions we've had in class
- I'm happy with the progress in writing that many of you have made
- I'm proud of all of you for sticking with it through such a demanding course

Course recap

- I've enjoyed teaching you
- I've been impressed by the levels of discussions we've had in class
- I'm happy with the progress in writing that many of you have made
- I'm proud of all of you for sticking with it through such a demanding course

THANKS!!!

Surveys

- Positive **and** negative feedback useful

Surveys

- Positive **and** negative feedback useful
- Invitation to send more feedback online

Surveys

- Positive **and** negative feedback useful
- Invitation to send more feedback online
 - Should the course be run again?
 - How should it change?

Surveys

- Positive **and** negative feedback useful
- Invitation to send more feedback online
 - Should the course be run again?
 - How should it change?
- Most important: course rating, instructor rating, written comments

Next Meeting

- The tournament!

Next Meeting

- The tournament!
- Wednesday, December 9th
- GDC 5.302
- 7pm–10pm

Next Meeting

- The tournament!
- Wednesday, December 9th
- GDC 5.302
- 7pm–10pm
- Come prepared to talk (informally) about your team