CS344M
Autonomous Multiagent Systems

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Good Afternoon, Colleagues

Are there any questions?
Logistics

- All readings up
Logistics

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- More reflections on peer reviews?
Logistics

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- More reflections on peer reviews?
- Final projects due in 2 weeks!
Reading Overview: Vidal and Durfee

Recursive Modeling Method

- What should I do?
Reading Overview: Vidal and Durfee

Recursive Modeling Method

- What should I do?
- What should I do given what I think you’ll do?
Reading Overview: Vidal and Durfee

Recursive Modeling Method

- What should I do?
- What should I do given what I think you’ll do?
- What should I think you’ll do given what I think you think I’ll do?
Recursive Modeling Method

- What should I do?
- What should I do given what I think you’ll do?
- What should I think you’ll do given what I think you think I’ll do?
- etc.
Prediction Method

- Situations
  - Includes physical and mental states
Prediction Method

- **Situations**
  - Includes physical and mental states
  - Could be computationally expensive

- Trade-off between time and performance gain
Prediction Method

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  - Includes physical and mental states
  - Could be computationally expensive

- Trade-off between time and performance gain

- When is it worthwhile to model deeper?
Lessons

• Modeling can help

• There is a lot of useless information in recursive models

• Approximations (limited rationality) can be useful
Learning Teammate Models for Ad Hoc Teamwork

- Forced to work with a group of unknown teammates
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- Forced to work with a group of unknown teammates
- Start with learned models of prior teammates
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- Slides...
Where do Models Come From?

Observation:

- RMM: Use existing model
- Barrett: Learn model from prior experiences

What if we can’t build a full model in advance?
Where do Models Come From?

Observation:

- RMM: Use existing model
- Barrett: Learn model from prior experiences

What if we can’t build a full model in advance?

- How can we build a predictive model on-line incrementally?
Play me at RoShamBo

- Rock beats scissors
- Scissors beats paper
- Paper beats rock
Play me at RoShamBo

- Rock beats scissors
- Scissors beats paper
- Paper beats rock

- What is your strategy before modeling me?
Play me at RoShamBo

- Rock beats scissors
- Scissors beats paper
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- What is your strategy before modeling me?
- What is your strategy after modeling me?
Play me at RoShamBo

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- Scissors beats paper
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- What is your strategy before modeling me?
- What is your strategy after modeling me?
- Am I modeling you?
Play me at RoShamBo

- Rock beats scissors
- Scissors beats paper
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- What is your strategy before modeling me?
- What is your strategy after modeling me?
- Am I modeling you?
Discussion

• How do you deal with a teammate/opponent who is adapting to you as well?
Discussion

- How do you deal with a teammate/opponent who is adapting to you as well?

- Applications of ad hoc teamwork?
Discussion

- How do you deal with a teammate/opponent who is adapting to you as well?
- Applications of ad hoc teamwork?
- What if there was communication?
Discussion

• How do you deal with a teammate/opponent who is adapting to you as well?

• Applications of ad hoc teamwork?

• What if there was communication?

• How would you build an ad hoc teammate?