CS344M
Autonomous Multiagent Systems

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Good Afternoon, Colleagues

Are there any questions?

Logistics

- Next week's readings

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- Progress reports due just over 2 weeks

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Surveys

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  - "By making us think about the readings, either through specific questions or through free-responses, the writing exercises help us to get more involved with the readings."

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- Discussion - Give better initiating questions
- Activities - More activities getting you designing solutions
- Machine learning - More tutorials on machine learning
- C/C++ help - More advice and specific documentation

Game Theory

- Multiagent systems
- Economics
- Social science, law, etc.

Goals for Today

- Understand premises of game theory
- Understand the notion of *utility*
- Understand solution concepts

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  - Dominant strategy
  - Nash equilibrium
  - Pareto optimality
  - Maximum social welfare
  - Maximin strategy

Prisoner's Dilemma

		Column	
		C(1)	D(2)
Row	C(1)	3,3	0,5
	D(2)	5,0	1,1

Game Theory Premises

- Simultaneous actions
- No communication
- Outcome depends on **combination** of actions

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- Utility (payoff) encapsulates **everything** about preferences over outcomes

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- Loss aversion
- Friendliness/vindictiveness

Solution Concepts

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Chicken

		Column	
		C(1)	D(2)
Row	C(1)	3,3	1,5
	D(2)	5,1	0,0

Discussion

- How would you design an agent to play iterated prisoner's dilemma?

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- What if you could submit up to 10 entries to the tournament?

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- What if you could submit up to 10 entries to the tournament?
- What is your strategy if you are playing only one game with a stranger, but can communicate first?

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Split or Steal

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		Split(1)	Steal(2)
Row	Split(1)	0.5,0.5	0,1
	Steal(2)	1,0	0,0