# CS395T Agent-Based Electronic Commerce Fall 2006

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Week 3a

#### **Good Afternoon, Colleagues**

Are there any questions?



### **Logistics**

• Reading responses



# **Logistics**

- Reading responses
- Changed readings



# **Logistics**

- Reading responses
- Changed readings
- Presentation dates: pick a topic and a date



## **Rational choice theory**

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## **Rational choice theory**

- Section 1.2.4: people are not always rational.
- Can this be explained away by arguing that with humans, the payoff function is not fixed once and for all?
- No! (Kahneman and Tversky)



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- First-price auction:  $(v_2, v_2, ...)$  is a Nash eq.
  - Many other Nash equilibria exist, but this one is "distinguished"
- In both cases, revenue is  $v_2$



# **Solution Concepts**

- Dominant Strategy
- Nash equilibrium strategy
- Pareto optimal strategy
- Strategies that maximize social welfare



• Chris Jones on Nash equilibrium



		Action	Player 1	2 Action	2
Player 1	Action 1	4,8		2,0	
	Action 2	6,2		0,8	



# Mixed strategy equilibrium Player 2 Action 1 Action 2 Player 1 Action 2 6,2 0,8

#### • What if player 2 picks action 1 3/4 of the time?



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- What if player 2 picks action 1 3/4 of the time?
- What if player 2 picks action 1 1/4 of the time?



Player 2 Action 1 Action 2 Action 1 4,8 2,0 Player 1 Action 2 6,2 0,8

- What if player 2 picks action 1 3/4 of the time?
- What if player 2 picks action 1 1/4 of the time?
- Player 1 must be indifferent between actions 1 and 2



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- What if player 2 picks action 1 1/4 of the time?
- Player 1 must be indifferent between actions 1 and 2
- Player 2 must be indifferent between actions 1 and 2



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- What if player 2 picks action 1 3/4 of the time?
- What if player 2 picks action 1 1/4 of the time?
- Player 1 must be indifferent between actions 1 and 2
- Player 2 must be indifferent between actions 1 and 2

Do actual numbers matter?

