

Multiagent decision-making and control

Randomized feedback games

Maryam Kamgarpour

Professor of Engineering (IGM, STI), EPFL

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Course topics

- 1 Static games
- 2 Zero-sum games
- 3 Potential games
- 4 Extensive form games
- 5 Randomized strategies in extensive form games
- 6 Dynamic games, dynamic programming for games
- 7 Dynamic games, linear quadratic games
- 8 Convex games, Nash equilibria characterization
- 9 Convex games, Nash equilibria computation
- 10 Auctions
- 11 Bayesian games
- 12 Learning in games
- 13 Final project presentations

Lecture outline

Today's lecture will be mainly on blackboard. I will upload detailed notes on Moodle. Meanwhile, the high-level concepts are put on slides here.

- Auctions motivation
- First-price and second-price auctions
- Multi-unit auction
- Vickrey-Clarke-Groves (VCG) auction mechanism

Examples of auctions

still ongoing in the Netherlands



Examples of auctions -art

Christie's art auction



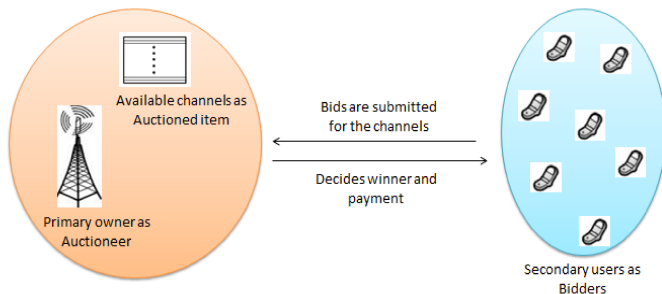
Examples of auctions

A fruit auction in 1957



Examples of auctions

How some governments sell the rights to transmit signals over specific bands of the electromagnetic spectrum to companies



Examples of auctions

How facebook, google and many other online platforms decides which ads are shown where/when



The Facebook Ad Auction

What You Need to Know

Our goal

- Formulate auctions as games
- Three specific auction mechanisms and properties of their equilibria
- Mechanism design and its challenges

Next steps

- 1 See lecture notes posted on Moodle for background, proofs and references
- 2 Read the references provided for additional insights



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