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September 5, 2007, 11:00am

Research Topic
Computational game theory

Research Problem
How can use issues related to computational complexity to improve mechanism design?

Problem Statement
Given a game theoretic interaction, construct a mechanism in which each participant cannot practically compute their true preferences.

Where a game theoretic interaction is a situation in which some number of participants must choose from a finite set of actions and each participants' reward is a function of the actions of all of the participants.

A mechanism: an algorithm for determining the outcomes of each participant in a game when given each player's preferences.

Practically compute: the cost of computing the true preferences exceeds the increase in profit afforded by the true preferences.

Problem Description
How can we design auctions so that people can't cheat or collude? Economists have been investigating this question for decades. More recently, computer scientists have been investigating the role of computation in mechanism design. For example, can we design mechanisms that are feasible but computationally difficult for agents? How can randomness be introduced into a mechanism to deter cheating? How can mechanisms be designed to preserve the privacy of individuals?

Computer Science Perspective
The primary computer science issues involved in mechanism design are issues of computational complexity.

Actively Involved Discipline:
A discipline is an actively involved discipline if there is an actively involved individual who belongs to that discipline.

An actively involved individual is an individual who has received credit in any related publications or presentations or who is mentioned by the principal investigators, either through verbal or written communications, online or offline, digital or analog.

Disciplines actively involved
Theoretical Computer Science
Game Theory

Description of Disciplines Involved
Economics
Psychology
Sociology

References
Presenter web page:
http://www.cs.cmu.edu/~sandholm/
Agent-Mediated Electronic Marketplaces Lab:
http://www.cs.cmu.edu/~amem/amem.html

By Jfolson
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