Computers and Markets: Exploring the Intersection of Computer Science, Microeconomics and Game Theory

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This talk will provide an introduction to core concepts, fielded applications and ongoing research from the field of multiagent systems. This growing interdisciplinary research area brings together ideas from computer science, microeconomics and game theory. Its focus is on tackling both computational and incentive problems that arise when multiple self-interested agents interact.

The first part of the talk will examine ways in which game theory can be used to model large-scale interactions such as computers routing packets through the internet, businesses choosing new locations, and users sharing files through P2P systems. Computational challenges arise when problems become large; we will examine some new research into ways of overcoming these hurdles.

The second part of the talk will discuss some of the theoretical underpinnings of modern electronic markets such as eBay, Google's ad auctions and the FCC's multi-billion dollar sales of radio spectrum. These settings present a variety of computational challenges, many of which arise when the amount a buyer would be willing to pay for one good is linked to which other goods she will win.