



Seminar Series Supported by Jeffrey and Holly Ullman Society, Network and Game Theory Day 30 January, 2012

10:45 Coffee & Registration

10:55 Opening Remarks and Greeting

Shlomi Dolev Ben-Gurion University

11:00 Allocating Multiple Resources: things micro-economics
never told me

Noam Nisan, Hebrew University

Abstract: The central motivation of Algorithmic Mechanism Design is the allocation of multiple interdependent resources. There are many variants, models, and settings for questions of such flavor, and one would naturally use existing economic theory and game theory as starting points for addressing such questions. In this talk I will present examples from my recent research where the main challenge lies in problems that are still open in economic theory. In these examples economic theory knows how to deal with the case of one resource or with the limit case of infinitely many resources , but not with the cases of interest in our settings, that of "m" resources. Our results shed some light on these open questions but mostly highlight that they are still very open even for m=2 and are of central interest in the study of electronic markets and auctions.

Based on joint works with Avinatan Hassidim, Haim Kaplan, Yishay Mansour, with Sergiu Hart, and with Shahar Dobzinski

11:50 Coffee Break

12:00 The combinatorics of Voting Paradoxes

Noga Alon, Tel-Aviv University

The early work of Condorcet in the 18th century, and that of Arrow and others in the 20th century, revealed the complex and interesting mathematical problems that arise in the theory of Social Choice, showing that the simple process of voting leads to strikingly counter-intuitive paradoxes. I will describe some of these, focusing on several intriguing examples whose analysis combine combinatorial and probabilistic ideas with techniques from the theory of the VC dimension of range spaces.

12:50 Lunch Break

13:20 Short Talk Session

Shlomi Dolev, Kobbi Nissim, Oscar Volij, Bradley Ruffle,
Yakir Levin

14:10 The Social Organization of Venture Capital Industry in
Israel:Preliminary Results on the Impact Betweenness Centrality
and Local Density on Performance

Ilan Talmud, Haifa University

Abstract: This study examines the social embeddedness of venture capital (hereafter: VC) industry in Israel. More specifically, it inquires into the social organization of the Israeli VC industry 1995- 2004. This study analyzes relational patterns using

network models of competitive advantage, social capital, and power dispersion. The analysis is also informed by complementary secondary and qualitative data sources as well. Finally, we discuss implications for business strategy and policy, organizational sociology, network theory, and the structural analysis of emerging markets for contextual knowledge, and for firms operating under severe hyper-competition and environmental uncertainty. In further analysis, semantic networks of agents will map onto structural properties.

14:50 Coffee Break

15:00 Networks Resilience to Geographical Disasters and
Attacks

Reuven Cohen, Bar-Ilan University

Abstract: Communication networks are vulnerable to natural disasters, such as earthquakes or floods, as well as to physical attacks, such as an Electromagnetic Pulse (EMP) attack. Such real-world events happen in specific geographical locations and disrupt specific parts of the network. Therefore, the geographical layout of the network determines the impact of such events on the network's connectivity. Thus, it is desirable to assess the vulnerability of geographical networks to such disasters. I will discuss several algorithms, based on mixed linear planning and computational geometry, to locate such vulnerabilities, and present some case studies on real networks.

Joint work with Sebastian Neumayer, Gil Zussman and Eytan Modiano

15:40 On the Elite of Social Network

Zvi Lotker, Ben-Gurion University

Abstract: "The richest, most powerful, best educated or best trained group in a society"

In many communities there is an "elite", a relatively small group of participants that is well connected and highly influential. In order to understand the whole community and the underlying mechanisms it is hence very helpful to study the characteristics and the emergence of the elite. In the past it has been shown that various social networks exhibit surprisingly similar properties, like power law degree distributions, small diameter, many triangles, etc. In this paper we examine the x-elite of nine existing complex networks, where the x-elite consists of the x nodes with the highest degree out of all n nodes in the network. Based on this simple notion of importance, we investigate the structures these nodes form among each other and the rest of the network.

We observe, in all networks we analyzed, that a small-sized elite containing about vn nodes forms a dense subgraph, is connected to a significant fraction of the outside nodes, consists of nodes that arrived to the network early, is more symmetric than the whole network and has a much higher average degree than the network as a whole. We compare these findings to social network models and identify some properties which are not featured by graphs generated by these models. To the best of our knowledge none of the existing models is able to generate networks with the elite properties we observed.

Joint work with Chen Avin and Yvonne-Anne Pignolet

16:20 End of Society, Networks and Game Theory Day

Organizing Committee: Chen Avin, Shlomi Dolev, Zvi Lotker

