

## נושאים מתקדמים במדמ"ח 11 - 236611

### מודלים בחישוב חברתי (Social Computing Models)

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Inspired by the emergence of Internet commerce and advertising as well as social networks, the recent years have been flowering in establishing connections between computer science to the social sciences, and in particular economics and sociology. Some of the foundational work has been carried out in the theoretical CS community and some by the AI community. This course will provide with the fundamental models one need to know in order to understand the foundations of work on these topics, as viewed mostly from the foundational AI side. It is a basic course as it is built only on familiarity with calculus and linear algebra, probability, and graph algorithms. It is however a relatively advanced basic course as it will show some of the basic results of the area rather than focus only on general introduction.

Below is a sketch of 13 weeks course:

1. Introduction to game theory
2. Congestion and network games
3. Facility location and information retrieval games
- 4—6. Display advertising / Sponsored Search / Affiliate Marketing
- 7—9. Social choice and preference aggregation
10. The agent learning perspective in computational social systems
11. Voting in networks
12. Positive and negative relationships in social networks
13. Small world phenomena in networks and the analysis of decentralized search

The topics may be modified/extended as time permits. Each week consist of two hours lecture.

Part of the course will make use of the advanced material presented in "Networks, Crowds, and Markets" by Easley and Kleinberg (available on-line), while the rest of that book will serve for less technical home reading.

Grading will be done by a final exam (90% of grade) and exercises to be provided (10% of the final grade).