

Computational Social Choice

Overview

The rapidly growing field of computational social choice, at the intersection of computer science and economics, deals with the algorithmic and complexity-theoretic aspects of collective decision making. Some of the classical themes pursued include (but are not limited to) voting procedures, problems of fair division, and matching.

The ingredients of a typical voting problem are agents (or voters) and alternatives (or candidates). Agents express their opinions over the alternatives (either in the form of approval ballots, or partial orders, or complete rankings), and our task is typically to produce an outcome (either a single winner, a committee, or a ranking) that reflects the overall societal opinion. The voting setup is ubiquitous and finds applications in various scenarios, ranging from political elections and hiring committees, to recommender systems and crowdsourcing.

This course addresses several algorithmic and complexity-theoretic themes in computational social choice, such as the design of efficient mechanisms for a given task, the use of computational complexity as a barrier against strategic behaviour, and the exploitation of input structure to work around axiomatic impossibility issues. For the most part, we will use the voting scenario as the running backdrop, although we will allude to other types of problems briefly as well.

Course participants will learn these topics through lectures and assignments. The classes will be transcribed by the students.

Modules	A: Computational Social Choice : December 04 – December 08 Number of participants for the course will be limited to fifty.
You Should Attend If...	<ul style="list-style-type: none">▪ a researcher, graduate student, or an advanced undergraduate student familiar with algorithms and interested in voting theory, multiagent systems, and computational social choice▪ you are an engineer who is interested in learning state of the art methods in computational social choice – these will be useful if your application area involves themes like multi-agent decision making, ranking of choices, strategic behavior and so on.
Fees	The participation fees for taking the course is as follows: Industry/Research Organizations: 1500 INR Academic Institutions: 1000 INR Students: 750 INR The above fee includes all instructional materials, access to the computer labs (during specified times), and 24-hour free internet facility. The participants will be provided with accommodation on payment basis, subject to availability. The above does not include charges for registration on the GIAN portal.

The Faculty



Professor Edith Elkind joined the Oxford Computer Science Department in 2013. Her research is supported by an ERC Starting Grant. Prior to coming to Oxford she was an Assistant Professor at Nanyang Technological University (Singapore). Prof Elkind obtained her PhD from Princeton University in 2005, and was a postdoctoral research fellow at the University of Warwick, University of Liverpool and Hebrew University of Jerusalem, as well as a lecturer (Roberts Fellow) at University of Southampton.

Course Co-ordinators

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