Paper Submissions for COMSOC-2014

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Abstract

This short paper explains the formatting instructions for submissions to the Fifth
International Workshop on Computational Social Choice.

1 Formatting Instructions

Authors are invited to submit full papers not exceeding 12 pages, *excluding* references and
a clearly-marked appendix of arbitrary length that will be read at the discretion of the PC
members. Each paper should include a title, the names and contact details of all authors,
and an abstract of 100–300 words.

Please format your paper according to the following guidelines. The most important
requirements are (1) that the submission should be formatted for A4 paper (that is, the
page size as shown under *Document Properties* in the Acrobat Reader, for instance, should
be 8.27×11.69 in); and (2) that the text should fit into an area of 5.5×8.5 in (14×21.6 cm).
This excludes page numbers (which we suggest you include for the submission, but which
must be removed for the camera-ready version in case of acceptance). Please use a 10pt
typeface, with suitable deviations for section headings, footnotes, etc. In general, please aim
at having your paper look as close to this sample as possible. The easiest way of achieving
this is to use the LaTeX document preparation system with the style file `comsoc2014.cls`
provided at the workshop website (take the file `sample.tex` as a starting point).

Papers not conforming to these guidelines will be accepted for review (provided they
are not excessively long), but in case of acceptance we must insist that the guidelines be
followed during preparation of the camera-ready version.

2 What is Computational Social Choice?

Computational social choice [2, 1, 7] is an interdisciplinary field of study at the interface
of social choice theory and computer science, promoting an exchange of ideas in both di-
rections. On the one hand, it is concerned with the application of techniques developed in
computer science, such as complexity analysis or algorithm design, to the study of social
choice mechanisms, such as voting procedures or fair division algorithms. On the other
hand, computational social choice is concerned with importing concepts from social choice
theory into computing. For instance, social welfare orderings originally developed to analyse
the quality of resource allocations in human society are equally well applicable to problems
in multiagent systems or network design.

Social choice theory is concerned with the design and analysis of methods for collective
decision making. Examples include in particular voting protocols, but also procedures for
fairly dividing a number of goods between several agents. Much classical work in the field
has concentrated on establishing abstract results regarding the existence (or otherwise) of
procedures meeting certain requirements, but such work has not usually taken computational
issues into account. For instance, classical results in voting theory show that, under some
weak and very natural conditions, it is impossible to design a voting protocol that voters

cannot manipulate by reporting insincere preferences when casting their ballots. A voting system that induces such insincere voting behaviour cannot be expected to reliably return the socially most preferable candidate as a winner. In recent years, computer scientists have started to analyse this kind of problem from a computational point of view [6, 4, 5]. The basic idea is that, should it be the case that manipulating successfully is a computationally intractable problem, then manipulability may be less of a worry. Other applications of preference aggregation and collective decision making include multiagent resource allocation, auctions, and prediction markets, where strategic behaviour is again analysed both game-theoretically and from a computational perspective [3].

Another example for the application of tools typically used in computer science to problems stemming from economics and social choice is the use of logic for the formal specification and verification, or more generally analysis, of social procedures. In the same way as computer scientists have long been using logic to formally specify the behaviour of computer systems, so as to allow for the automatic verification of certain desirable properties of such systems, suitable logics may be used to specify social procedures such as voting protocols or fair division algorithms. This line of research is also known as "social software".

Known methods for collective decision making and classical results from social choice theory may not always be applicable when the number of alternatives from which to choose is large. This may, for instance, be the case when these alternatives have a combinatorial structure, as in negotiation over indivisible goods (where the number of bundles an agent may obtain is exponential in the number of goods) or committee elections (where the number of possible committees is exponential in the number of seats to be filled). For such combinatorial problems, the mere representation of the preferences of individuals over different alternatives becomes a non-trivial problem. A third example for work in computational social choice is then the application of techniques developed in artificial intelligence and logic for the compact representation of preferences to this kind of problem.

References

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