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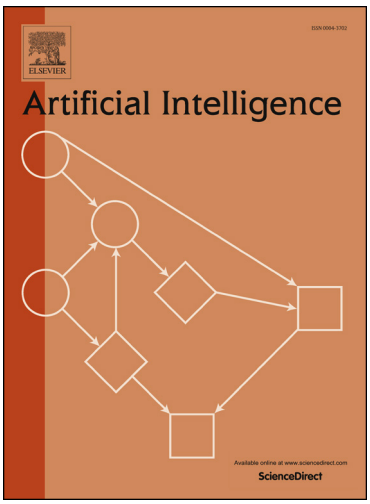

Iterative voting and acyclic games

Reshef Meir, Maria Polukarov, Jeffrey S. Rosenschein, Nicholas R. Jennings

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Iterative Voting and Acyclic Games[☆]

Reshef Meir[*]

Technion—Israel Institute of Technology

Maria Polukarov

King's College London, United Kingdom

Jeffrey S. Rosenschein

The Hebrew University of Jerusalem, Israel

Nicholas R. Jennings

Imperial College London, United Kingdom
King Abdulaziz University, Saudi Arabia

Abstract

Multi-agent decision problems, in which independent agents have to agree on a joint plan of action or allocation of resources, are central to artificial intelligence. In such situations, agents' individual preferences over available alternatives may vary, and they may try to reconcile these differences by voting.

We consider scenarios where voters cannot coordinate their actions, but are allowed to change their vote after observing the current outcome, as is often the case both in offline committees and in online voting. Specifically, we are interested in identifying conditions under which such iterative voting processes are guaranteed to converge to a Nash equilibrium state—that is, under which this process is acyclic. We classify convergence results based on the underlying assumptions about the agent scheduler (the order in which the agents take their actions) and the action scheduler (the actions available to the agents at each step). By so doing, we

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[*]Corresponding author

Email addresses: reshefm@ie.technion.ac.il (Reshef Meir), maria.polukarov@kcl.ac.uk (Maria Polukarov), jeff@cs.huji.ac.il (Jeffrey S. Rosenschein), n.jennings@imperial.ac.uk (Nicholas R. Jennings)