

COMPUTER-AIDED REASONING

ABOUT COLLECTIVE DECISION MAKING

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Collective Decision Making = Algorithms

Computational Complexity

Compute outcome

Barrier against Manipulation

Computational Complexity

Compute outcome

Barrier against Manipulation

Logic & Knowledge Representation

Compact Representation of Preferences

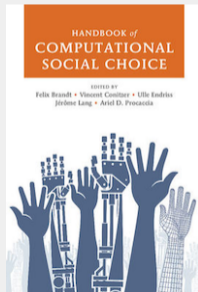
Voting in Combinatorial Domains

Computational Complexity

Compute outcome
Barrier against Manipulation

Logic & Knowledge Representation

Compact Representation of Preferences
Voting in Combinatorial Domains



Automated Theorem Provers

SAT Solving

Bounded Model Checking

SMT Solvers

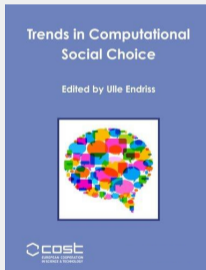
Pingzhong Tang and Fangzhen Lin. 2009. Computer-aided proofs of Arrow's and other impossibility theorems. *Artificial Intelligence* 173, 11 (2009), 1041–1053.

Automated Theorem Provers

SAT Solving

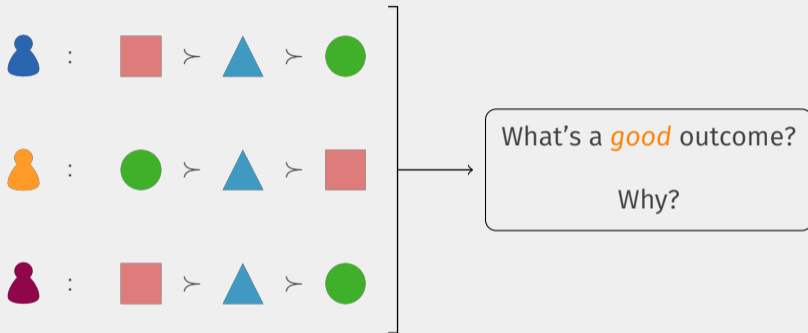
Bounded Model Checking

SMT Solvers



Pingzhong Tang and Fangzhen Lin. 2009. Computer-aided proofs of Arrow's and other impossibility theorems. *Artificial Intelligence* 173, 11 (2009), 1041–1053.

JUSTIFYING COLLECTIVE DECISIONS



Arthur Boixel and Ulle Endriss. 2020. Automated Justification of Collective Decisions via Constraint Solving. In Proceedings of the 19th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2020). IFAAMAS.

