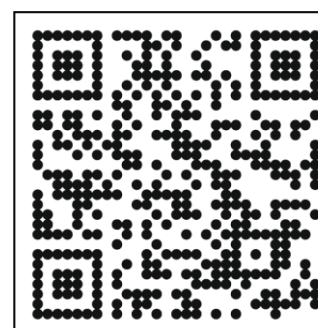




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静园5号院

青年讲座



The Art of Two-Round Voting



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Abstract

We study the voting problem with two alternatives where voters' preferences depend on a not-directly-observable state variable. While equilibria in the one-round voting mechanisms lead to a good decision, they are usually hard to compute and follow. We consider the two-round voting mechanism where the first round serves as a polling stage and the winning alternative only depends on the outcome of the second round. We show that the two-round voting mechanism is a powerful tool for making collective decisions. Firstly, every (approximated) equilibrium in the two-round voting mechanisms (asymptotically) leads to the decision preferred by the majority as if the state of the world were revealed to the voters. Moreover, there exist natural equilibria in the two-round game following intuitive behaviors such as informative voting, sincere voting, and surprisingly popular strategies. This sharply contrasts with the one-round voting mechanisms in the previous literature, where no simple equilibrium is known. Finally, we show that every equilibrium in the standard one-round majority vote mechanism gives an equilibrium in the two-round mechanisms that is not more complicated. Therefore, the two-round voting mechanism provides a natural equilibrium in every instance, including those where one-round voting fails, and it can reach an informed majority decision whenever one-round voting can. Our experiments on LLM voters also imply that two-round voting leads to the correct outcome more often than one-round voting under some circumstances.

Biography

Qishen Han is a forthcoming Postdoc Researcher at LAMSADE, CNRS. He received his Ph.D. in Computer Science at Rutgers University, co-advised by Prof. Lirong Xia and Prof. David Pennock. Prior to that, he received a B.S. degree in Intelligence Science and Technology, as a member of Turing Honor Class, and a B.Ec. dual degree in Economics from Peking University. He works on computational social choice, with a focus on strategic voting and information aggregation, multiwinner representation, and the intersection on AI and social choice.