Universität Basel

Research Project

Game Theoretical Analysis of Proof of Stake

Project funded by own resources

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In a decentralized system, no one can be forced to honor or implement a given set of rules. Without such obligation, any disagreement will threaten to split the system, where one part of the network chooses to implement one set of rules, and the other part of the network chooses to use a different set of rules. To avoid such splits, consensus rules need to be self-enforcing, that is, they must induce a Nash equilibrium or some other related game-theoretic equilibrium concept.

Our project investigates how consensus in blockchain based distributed systems can be achieved; namely, under which conditions network participants agree to use a given set of rules. For our analysis of consensus in blockchain based distributed systems, our focus will be on a game-theoretic analysis of the proof-of-stake and the proof-of-work consensus mechanisms.

Keywords blockchain, proof of stake, consensus mechanism, game theory
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