

End-to-end Model for Participatory Budgeting

Shortlisting and incentives in a two-stage model

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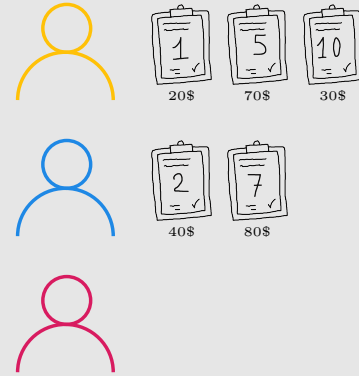
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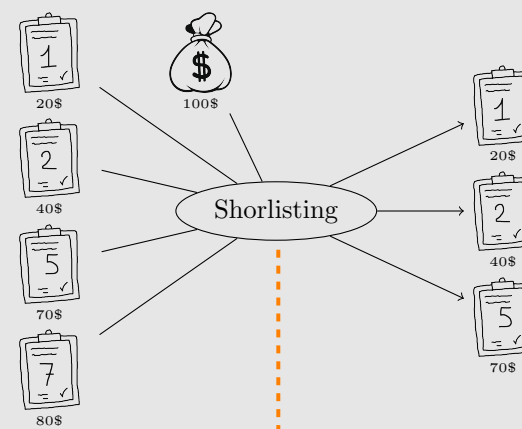
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The Model

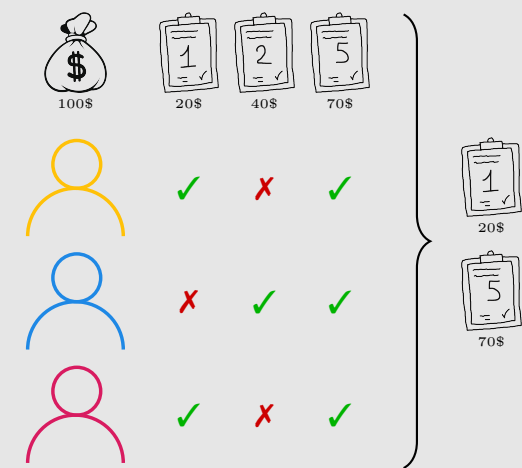
Agents think about their proposals



They submit subsets of their proposals, that are shortlisted



Agents vote on the shortlist to determine the budget allocation



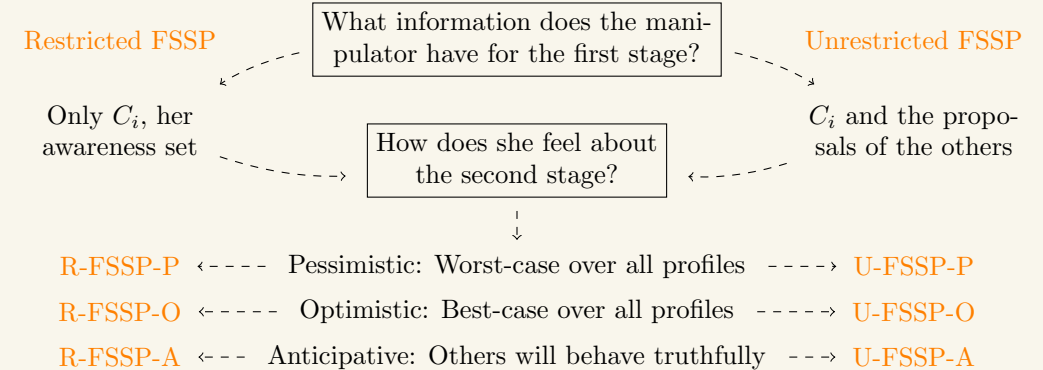
Shortlisting Rules

Nomination Shortlisting Rule	k -Equal Representation Shortlisting Rule	k -Median Shortlisting Rule
Shortlisting everything	Ensuring everyone is represented in the shortlist	Ensuring no two similar proposals are shortlisted
Non-Wasteful	Non-Wasteful	Non-Wasteful
Representative	Representative	Non-representative
P	NP-hard	NP-hard

Non-wasteful: Either all the proposals are shortlisted or the cost of the shortlist exceeds the budget limit.

Representative: The shortlist is not representatively dominated by another one, i.e., there is no other shortlist that is a Pareto improvement with respect to the number of submitted and shortlisted projects per agent.

First-Stage Strategyproofness



R-FSSP-P: X
R-FSSP-O: X
R-FSSP-A: X
R: non-wasteful
F: exhaustive

U-FSSP-P: ✓
R: Nomination
F: exhaustive & unanimous

U-FSSP-P: X
U-FSSP-O: X
R: equal-repr. or median
F: unanimous

U-FSSP-A: X
R: any of our rules
F: greedy or max