

Mechanism Design for Participatory Budgeting

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University of Amsterdam

AAMAS 2022 — Doctoral Consortium

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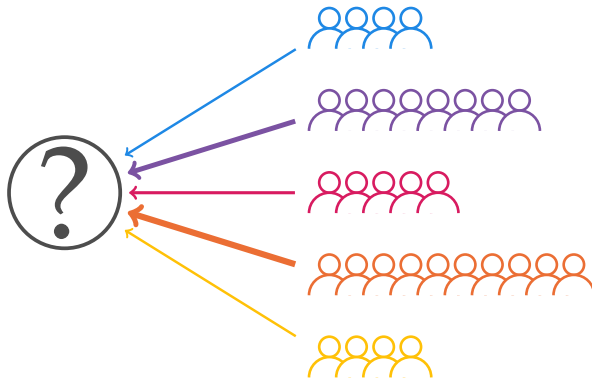
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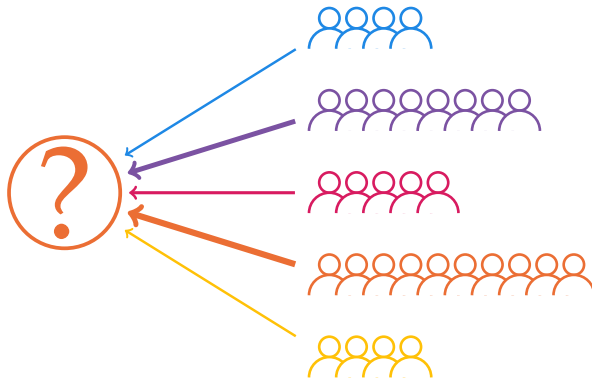
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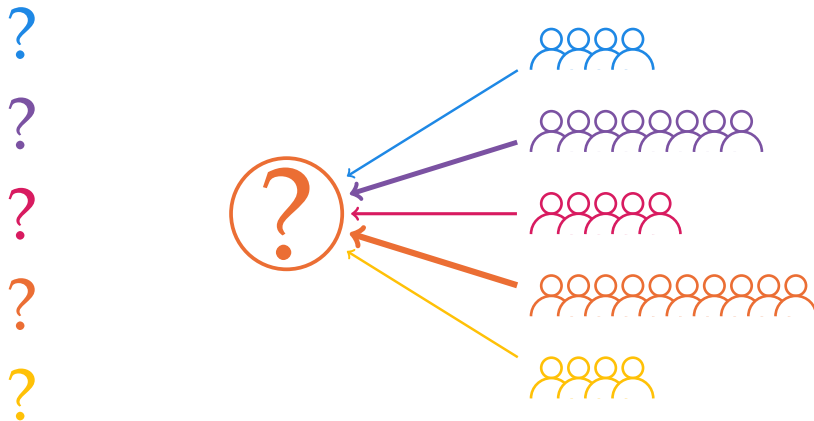
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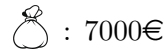




Computational Social Choice: The study of how to efficiently aggregate preferences into suitable collective choices.

Participatory Budgeting

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Participatory Budgeting

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1000€



2000€



2500€













2500€













5000€

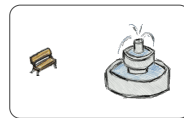
👛 : 7000€

Mechanisms for Participatory Budgeting

7000€ 					
	1000€	2000€	2500€	2500€	5000€
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	X	X	X	X	✓
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	✓✓✓	XXX	XXX	XXX	✓✓✓
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	X	X	X	X	✓
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↳ All these properties cannot be achieved simultaneously, but we can study them independently and try to identify the overlap!


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 7000€



 1000€

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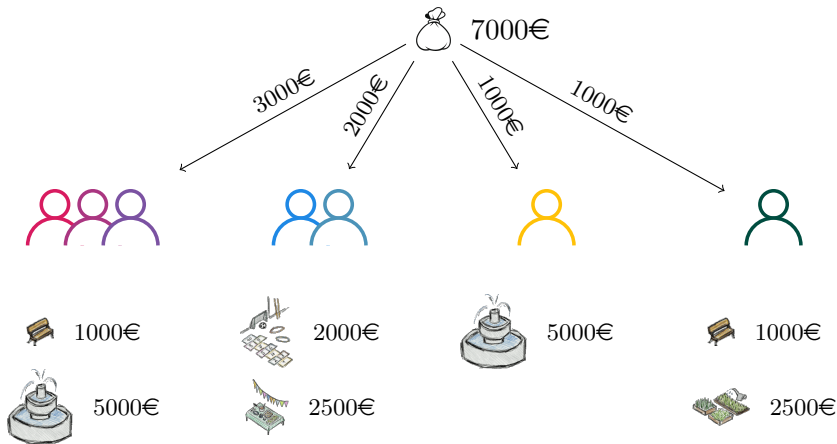
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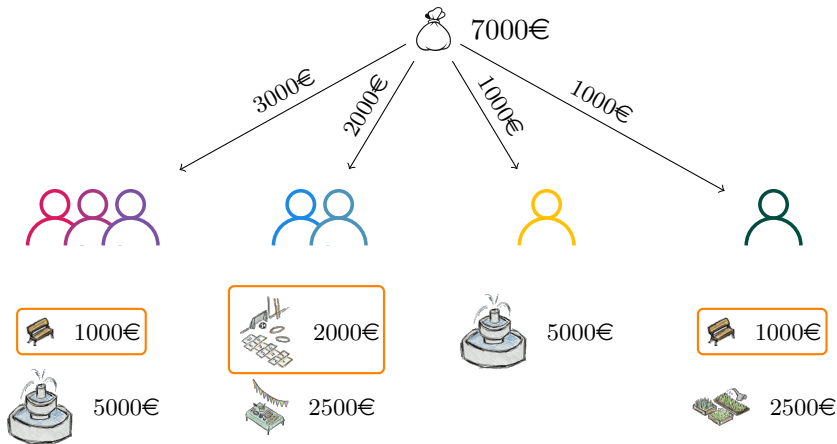
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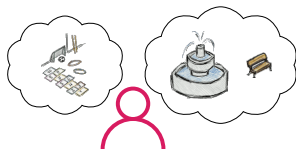
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I have studied related problems in:

- [Lacker, Maly, Rey \(IJCAI 2021\)](#): looking at fairness in a long-term approach to participatory budgeting;
- [Maly, Rey, Endriss, Lackner \(Working paper\)](#): defining fairness in terms of effort for approval-based participatory budgeting.

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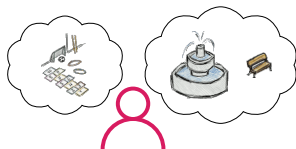


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	✓✓✓	✓XX	XXX	XXX	✓✓	1000€ 4
	XX	✓✓	✓✓	XX	XX	5000€ 4
	X	X	X	X	✓	2000€ 3
	✓	X	X	✓	X	2500€ 2
						2500€ 1



Incentive Compatibility

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	✓✓	✓XX	XXX	XXX	✓✓	1000€ 4
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I have studied related problems in:

- [Rey, de Haan, Endriss \(IJCAI 2021\)](#): incorporating the first stage of participatory budgeting into the model to look for mechanisms incentivizing agents to submit truthful proposals.

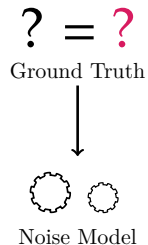
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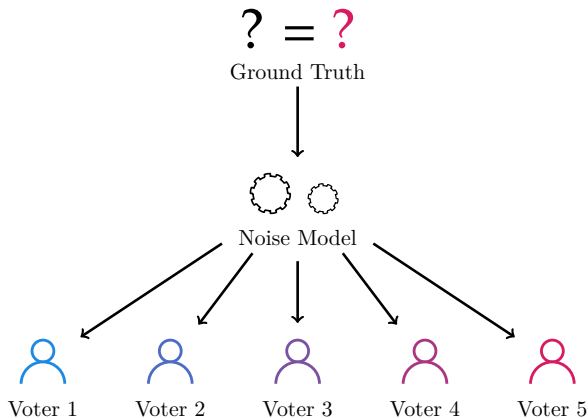
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Ground Truth

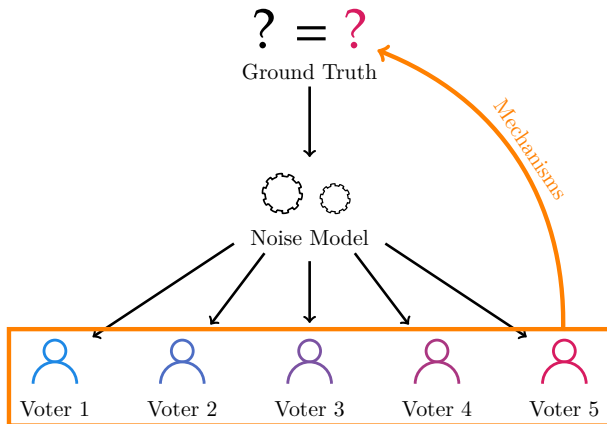
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- Can we find use-cases of the truth-tracking approach to participatory budgeting?
- How to define noise models when it comes to participatory budgeting?
- What sorts of mechanisms would be good at recovering the truth?

Are mechanisms and their properties robust to small variations in the model?

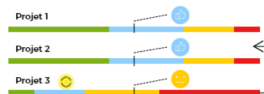
Qu'est-ce que la bonification des projets « quartiers populaires » ?

Certains projets sont estampillés « quartiers populaires ».



Ceci signifie qu'ils sont localisés dans ces quartiers ou bénéficient largement à leurs habitantes et habitants. Pour les arrondissements concernés par ces projets, un nombre minimum de projets lauréats estampillés « quartiers populaires » est garanti. Ce nombre est fixé en fonction de la population habitant dans ces quartiers.

Concrètement, certains projets « quartiers populaires » pourront être lauréats grâce au bénéfice de cette bonification, et quand bien même ils auraient initialement un moins bon profil de mérite que d'autres projets non « quartiers populaires ». Dans l'exemple ci-dessous, et dans le cas où l'arrondissement a 2 projets lauréats dont au moins 1 projet « quartiers populaires », la bonification permet de faire passer le projet 3 en seconde position sur le classe final, et donc d'être lauréat !



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I have studied related problems in:

- [Rey, de Haan, Endriss \(KR 2020\)](#): encoding participatory budgeting as an instance of judgment aggregation to have a more general approach to it.

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This is a constant issue:

- ↳ What kind of proportional criteria can be enforced in polynomial time?
- ↳ What would be the computational complexity of tracking the truth in participatory budgeting?
- ↳ Can adaptable mechanisms be computationally efficient?

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- Can we characterise some participatory budgeting rules by means of axioms?