Review Feedback and Response

- The purpose of author feedback is to point out technical errors or significant misunderstandings. It is not meant to dispute the opinions of the reviewers, or to explain how criticisms can be addressed!
- Do not expect replies to your feedback in the final reviews. Rest assured that feedback identifying true flaws or misunderstandings will be taken into account in final decisions.
- Please do not provide feedback explaining how you can address the referees' concerns or criticisms. It is our assumption already that concerns will be addressed in the final version.
- Feedback should be brief and specific. Feedback is strictly limited in length to 150 words per review, no exceptions.

Paper ID	317
Paper authors	Dengji Zhao, Siqi Luo, Taiki Todo, Makoto Yokoo
Paper title	False-name-proof Combinatorial Auction Design via Single-minded Decomposition
Paper subtitle	
Track	()
Paper Type	Long Paper (6 pages)
Status	First Ballot
Keywords	Agent-based and Multi-agent Systems::Auctions And Market-Based Systems ** Agent-based and Multi-agent Systems::E-Commerce ** Agent-based and Multi-agent Systems::Game Theory
Abstract	This paper proposes a new approach to building false-name-proof (FNP) combinatorial auctions from those that are FNP only with single-minded bidders, each of whom requires only one particular bundle. Under this approach, a general bidder is decomposed into a set of single-minded bidders, and after the decomposition the price and the allocation are determined by the FNP auctions for single-minded bidders. We first show that the auctions we get with the single-minded decomposition are FNP if those for single-minded bidders satisfy a condition called PIA. We then show that another condition, weaker than PIA, is necessary for the decomposition to build FNP auctions. To close the gap between the two conditions, we have found another sufficient condition weaker than PIA for the decomposition to produce strategy-proof mechanisms. Furthermore, we demonstrate that once we have PIA, the mechanisms created by the decomposition actually satisfy a stronger version of false-name-proofness, called false-name-proofness with withdrawal.
Average overall recommendation	7.55
Download	

ReviewerID: 142

6 7 8 7 7 6 7 7

Comments to author(s)

SIGNIFICANCE:
The paper does not clarify how useful this approach is because its viability is not assessed (except for the failure regarding ARP), although Section 7 is supposed to discuss the applicability of the sufficient and necessary conditions. However, it introduces a new design perspective and the PIA condition is intuitive. Although it is argued that designing mechanisms for the single-minded case is easier in general, the paper only mentions ARP as a false-name-proof mechanism for the single-minded case.

ORIGINALITY:
The proposed idea to design false-name-proof mechanisms is new. The framework and mathematical model are standard.

RELEVANCE:
This paper is relevant to ECAI because it deals with combinatorial auctions and in particular false-name-proofness.

TECHNICAL QUALITY:
The paper looks technically sound.

PRESENTATION QUALITY:
The quality of presentation is decent. The explanations after each statement of a condition are helpful.

Summary of review

The paper presents an approach to reduce the design of false-name-proof mechanisms for combinatorial auctions in the general bidder

scenario to the single-minded case. It is relevant and technically sound. Although the approach is original and seems promising, its usefulness is not assessed in full.

You may (but need not) reply to the review. Your reply will be visible to the PC members and area chairs that handle your paper.

In the author's opinion, this is Please select

Please enter your reply here:

Back

Submit

Significance	Originality	Relevance	Technical qualit	Presentation qua	Scholarship	Confidence	Overall recommen
9	9	9	9	9	9	8	9

ReviewerID: 1132 **[Nomination for Best Paper Award]**

Comments to author(s)
1)In section 5 second paragraph you write the word "some" twice.
2) In Proposition 1 you use incorrect sign to say that S is a sub set of N (you use the belonging sign instead of including sign).
3)the same above for Condition 1.
4) my only concern is regarding the exponential definition of the problem once the bids for boundle is not restricted. That is, now each bidder is represented by an exponential set of bidders. So how the time complexity is handled?

Summary of review
The paper proposes a new approach for designing False-Name-Proof combinatorial auctions with "general" bidders. This approach suggests decomposing a "general" bidder into K-single minded bidders. By doing, they allow the use of False-Name-Proof auction mechanisms designed for single minded-bidders, which are deeply studied and several such auction mechanisms were proposed, to be applied for the general case.

Specifically, they first show that under a PIA condition for Single-minded combinatorial auction mechanism, the proposed decomposition technique produces a False-Name-Proof combinatorial auction for the general bidders.

Moreover, they suggest some necessary conditions for designing FNP using the decomposition technique.

Some further investigation is provided using another proposed condition from existing literature.
In general I found the paper very innovative solid and sound. It is well written and structure.

You may (but need not) reply to the review. Your reply will be visible to the PC members and area chairs that handle your paper.

In the author's opinion, this is Please select

Please enter your reply here:

Back

Submit

Significance	Originality	Relevance	Technical qualit	Presentation qua	Scholarship	Confidence	Overall recommen
5	6	7	5	7	8	5	6

ReviewerID: 1739

Comments to author(s)
The paper proposes a general framework for designing false-name proof combinatorial auctions, by reducing the general case to the single-minded case. The authors provide several sufficient and necessary conditions for the reduction to work. The results are non-computational in nature, but the issue of false-name bidding is especially important in internet-based settings, so I judge the paper to be in scope for ECAI. However, I have a hard time making sense of the message of the paper. Specifically, after the discussion of sufficient and necessary conditions and ways to close the gap between them, the authors have a section entitled "The Applicability", where I would expect to see a list of mechanisms satisfying these sufficient conditions that are also false-name proof in the single-minded setting. However, this section is devoted to showing that a specific mechanism presented in the literature fails the necessary condition. Thus,it remains unclear if the authors' methodology actually produces any false-name proof mechanisms for the general setting. Perhaps the authors can comment on this issue during the feedback stage.

I also have a problem with one of the technical results in the paper. Specifically, in Lemma 1 (first bulleted point) the authors say that the allocation for X \cup K_2 does not depend on whether the first bidder splits into multiple identities. I do not see why this is the case: the prices for X \cup K_2 may depend on the identities of the other bidders, even under WAP (the set of bidders X is effectively an argument of the price function). I would like to ask the authors to clarify this issue during the feedback stage.

Further comments:
In Definition 2, you take unions of types. Types ere not defined as sets,so it is not clear what this means.

Summary of review
The paper proposes a general framework for designing false-name proof combinatorial auctions, by reducing the general case to the single-minded case. The authors provide several sufficient and necessary conditions for the reduction to work. The results are non-computational in nature, but the issue of false-name bidding is especially important in internet-based settings, so I judge the paper to be in scope for ECAI. However, I have a hard time making sense of the message of the paper. Specifically, after the discussion of sufficient and necessary conditions and ways to close the gap between them, the authors have a section entitled "The Applicability", where I would expect to see a list of mechanisms satisfying these sufficient conditions that are also false-name proof in the single-minded setting. However, this section is devoted to showing that a specific mechanism presented in the literature fails the necessary condition. Thus,it remains unclear if the authors' methodology actually produces any false-name proof mechanisms for the general setting. Perhaps the authors can comment on this issue during the feedback stage.

I also have a problem with one of the technical results in the paper. Specifically, in Lemma 1 (first bulleted point) the authors say that the allocation for X \cup K_2 does not depend on whether the first bidder splits into multiple identities. I do not see why this is the case: the prices for X \cup K_2 may depend on the identities of the other bidders, even under WAP (the set of bidders X is effectively an argument of the price function). I would like to ask the authors to clarify this issue during the feedback stage.

Further comments:
In Definition 2, you take unions of types. Types ere not defined as sets,so it is not clear what this means

You may (but need not) reply to the review. Your reply will be visible to the PC members and area chairs that handle your paper.

In the author's opinion, this is Please select

Please enter your reply here:

Back

Submit