[AAMAS2013] Your Paper #488

AAMAS2013 <aamas2013@confmaster.net> 20 December 2012 22:58
To: Enrico Gerding <eg@ecs.soton.ac.uk>
Cc: Sebastian Stein <ss2@ecs.soton.ac.uk>, Valentin Robu <vr2@ecs.soton.ac.uk>, Dengji Zhao <dengji.zhao@gmail.com>, Nick Jennings <nrj@ecs.soton.ac.uk>, AAMAS2013 <aamas2013@confmaster.net>

Dear Enrico Gerding, Sebastian Stein, Valentin Robu, Dengji Zhao, Nick Jennings,

We are pleased to inform you that your paper #488
Title: Two-Sided Online Markets for Electric Vehicle Charging
has been accepted for full publication and oral presentation in the proceedings of the Twelfth International Conference on Autonomous Agents and Multiagent Systems (AAMAS2013).

Congratulations!!

The review process was extremely selective. Out of the 612 submissions that were reviewed, the program committee selected only 140 full papers and an additional 131 extended abstracts that will be allocated 2 pages each. These totals include papers and extended abstracts in the virtual agents, robotics, innovative applications and challenges/visions tracks.

The reviews of your paper are included below. In addition to the text of the reviews (which you have already seen initial versions of), the reviews include numerical scores (from 1 to 10) and in some cases reviews from SPC members and/or additional reviewers. Please be aware that the numerical ratings do not tell the whole story: in some cases, the PC and SPC members reached a different conclusion in the discussion, and did not update their reviews. Also, each PC and SPC member only saw a small subset of the overall submissions. In selecting the final program, we, the program chairs, read through the detailed recommendations from the PC and SPC and made decisions based on the overall set of papers.

Although there will be no further review of your paper, in some cases, the acceptance decision was influenced by the assumption that you would improve your paper according to the reviewer comments and/or according to your author response. As you prepare the final version of your paper, please take all the comments into account in order to publish the best possible paper.

You are allowed 8 PAGES in the proceedings.

In a later message we will provide you with the copyright and formatting instructions so that you can prepare the final camera-ready version.

*** Final papers are due by February 4th (11:59 PM HST). ***

For your paper to be published, at least one author must register at AAMAS and plan on attending in order to present it. The registration form is not yet available, but will be available later.

ALL ACCEPTED PAPERS WILL ALSO BE PRESENTED AS POSTERS IN A CONFERENCE WIDE POSTER SESSION. As a result, the poster session will be a very important part of the overall program, and we look forward to having your poster there.

If any of the authors of your paper are students, then you may want to apply for a student scholarship supporting their participation at the conference. However, please bear in mind that priority will be given to students who are the first author of a full AAMAS paper. Note that the deadline for applications will be in January 2013. For application details see the AAMAS 2013 website soon.

The conference program will be available on the conference website in a few weeks. Please also keep in mind the tutorial, workshop, demo, and doctoral mentoring programs.

Congratulations again and we look forward to seeing you at AAMAS 2013 this coming May in Saint Paul, Minnesota

Best regards,

Catholijn Jonker and Takayuki Ito
AAMAS 2013 Program Chairs---------- Review ----------
Relevance : 9
Originality and novelty : 7
Significance : 7
Readability and organization : 9
Technical quality and soundness : 8
Overall recommendation (Full Paper) : 8
Overall recommendation (Extended Abstract) : 8
Reviewer Confidence : 7

-- Comments to the author(s):
REVIEW CRITERIA

SUMMARY:

The paper presentas a two-sided, dynamic market approach for the management of reservations in an EV charging scenario. They present a simple payment scheme for the buyer side and adapt three well known payment schemes for the seller side. They theoretically analyze the most relevant theoretical properties of these approaches, such as efficiency, individual rationalyty, truthfulness and budget balance. Finally, a set of experiments are conducted in two scenarios to empirically validate the contributions of the different mechanisms.

RELEVANCE:

The paper presents an approach for allocation in an EV charging scenario, a setting which can clearly benefit from the use of multi agent systems. Therefore, it is relevant to AAMAS.

ORIGINALITY:

Market based mechanism design for combinatorial allocation has been widely studied, and its gaining focus in the last years. There have been a number of works on similar problems, as the authors acknowledge in the paper. However, to this reviewer's knowledge, there is no other work in the literature addressing two-sided dynamic markets (i.e. multiple buyers and sellers, with buyers entering and leaving the market at any time). In this sense, the paper is original, though the research methodology and approaches are (or are derived from) well-known techniques.

SIGNIFICANCE

As the authors state in the introduction, EV charging optimization will become a real problem in the near future. This paper address that problem, and in that sense the contribution is relevant. However, this reviewer is not so sure about the significance of the contribution to mechanism design, since all techniques and experimental methods in the paper are already well-known. Furthermore, the authors only consider linear additive preferences for agents, while some recent works (Klein, 2003) are pointing out that nonlinear preferences are dominant in large, real scenarios. Authors claim that the valuation functions could be substituted easily for arbitrary ones, but this reviewer misses some experiments showing how the results vary as the preference profiles turn more complex. Authors state in future work they will address more complex scenarios, but they seem to restrict that "complexity" to scenarios with more feasible solutions rather than more complex preference profiles.

TECHNICAL QUALITY

The paper is technically sound and follows the usual proof discipline of the mechanism design literature. In addition, experiments are provided to validate the weaker claims (such as the adequacy of the myopic truthfulness result).

This reviewer finds a bit awkward the random choice of the walking/driving preferences, understanding that drivers would usually prefer driving to walking in the proposed scenario. Perhaps the definition of a "drivers vs walkers" ratio and some measurements on how changing that ratio influences the outcome would be interesting for the future.

Also, the authors mention some related work [6,16,15] considering one-sided settings. It would be interesting to have a performance comparison between the proposed approach and these ones (maybe choosing randomly a station between the closest to destination, for instance).

QUALITY OF PRESENTATION

The paper is generally clear and well written. There are some concepts this reviewer would clarify in the text (e.g. competitiveness notion, opportunity costs, etc). Sketch proof to theorem 4 is a bit unclear too.
-- Summary:
The paper addresses a problem relevant to AAMAS, it is technically sound and clearly written. This reviewer has some non-critical concerns regarding originality and significance (detailed in the comments), and woud suggest some additions to the experiments to increase technical quality, but overall recommends the acceptance of the paper.
---------- End of Review ----------
---------- Review ----------
Relevance : 8
Originality and novelty : 7
Significance : 8
Readability and organization : 7
Technical quality and soundness : 6
Overall recommendation (Full Paper) : 7
Overall recommendation (Extended Abstract) : 8
Reviewer Confidence : 7

-- Comments to the author(s):
SUMMARY:

This paper proposed two-sided online mechanisms for Electric Vehicle charging problems. The authors developed payment rules for buyers and sellers respectively and proved theoretical properties of each rule. Also, experimental evaluations showed that the mechanisms can achieve a high efficiency under two realistic application scenarios.

RELEVANCE:

This paper dealing with mechanisms for EV charging problems is relevant to AAMAS.

ORIGINALITY:

This paper clearly pointed out the differences from previous works. Also, the authors introduced two value functions of buyers which can capture their preferences for charging EV in the real world.

SIGNIFICANCE

The authors addressed EV charging problems by using realistic application scenarios which had been mentioned as future work in [6].

On the other hand, a buyer's preference is somewhat restricted, since this paper assumes that she needs only a single time slot. Furthermore, the payment rules for sellers are from literatures and each rule does not satisfy desirable properties in a general case. Thus, the significance is marginal.

TECHNICAL QUALITY

This paper looks technically sound.

However, It is not clear how to determine the allocation when multiple buyers arrive in the market at the same time. In the proposed greedy allocation mechanism, the allocation for bidder i is determined without considering other bidders. I think there are cases where multiple bidders simultaneously arrive in the market. Thus, the authors had better mention how to determine a winner in this situation. As another realistic situation, how to deal with cancellations had better be addressed.

Furthermore, I think it is important to provide the worst-case bounds on efficiency and deficit. Especially, if the center does not know the upper bound of deficit, he cannot determine an appropriate participant fee to cover the deficit.

On experimental sides, the experimental results are not convincing, since the problem settings are relatively limited. The authors need to evaluate the mechanisms in various problem settings by varying parameters and using different distributions, including large problem settings

QUALITY OF PRESENTATION

The main part of the paper is well written and structured, but the mandatory sections were not included. The authors did not adhere to the AAMAS bibliography style and abused the font size in the bibliography. Ignoring the formatting instructions is undesirable.

-- Summary:
SUMMARY OF REVIEW:

This paper addressed EV charging problems by using realistic application scenarios which had been mentioned as future work in [6].This work is well-motivated and the results are good contribution for EV charging problems.

However, to support the usefulness of the proposed mechanisms, the worst case analysis of efficiency and deficit is required. It is also necessary to experimentally examine whether the mechanisms can scale up to large problems.

---------- End of Review ----------
------------ Review -------------
Relevance : 9
Originality and novelty : 7
Significance : 8
Readability and organization : 9
Technical quality and soundness : 8
Overall recommendation (Full Paper) : 8
Overall recommendation (Extended Abstract) : 9
Reviewer Confidence : 8

-- Comments to the author(s):
REVIEW CRITERIA

SUMMARY:

-Describe the paper in 2-3 sentences

The paper presented a two-sided online market mechanism that can be applied to some real-world EV charging scenarios. The paper discussed how some important properties (e.g., truthfulness, individual rationality, etc.) can be realized in the proposed mechanism. Also experimental evaluation on two scenarios has been presented.

RELEVANCE:

- Is the work relevant to AAMAS 2013? For example, does the paper describe:

* an implemented agent system for which the need to use agents is clearly

  motivated

* theoretical or applied work relevant to autonomous agents or multiagent

  systems

* methodologies or languages that can be used to construct agent systems

Yes!! The paper is definitely relevant to AAMAS2013. The paper tackled a problem on two-sided market mechanisms for agents, which is one of the most important topics in the area. Also the application domain is promising.

ORIGINALITY:

- Does the paper clearly point out differences from related research?

- Are the problems or approaches new? For example, does the paper:

* address a new problem or one that has not been studied in much depth?

* introduce an interesting research paradigm?

* describe an innovative combination of techniques from different disciplines?

* introduce an area that appears promising, or might stimulate others to

  develop promising alternatives?

As the authors mentioned in the paper, the presented idea seems the first one that realizes two-sided matching that has truthful and individually rational payment mechanism on the buyers' side as well as providing analysis on possible payment mechanisms on the sellers' side.

SIGNIFICANCE

- Is the work important? I.e. does the paper make a valuable contribution

  to knowledge and understanding in the area?

- Does it advance the state of the art?

- Does the paper add to our understanding of some aspect of agent systems?

- Does the paper stimulate discussion of important issues or alternative

  points of view?

- Does the paper carefully evaluate the strengths and limitations of its

  contributions, and draw lessons for future work?

On a theoretical aspect, the paper gave necessary proofs for important properties (e.g., truthfulness, etc.). The presented theoretical analysis itself is significant enough to be published.

Furthermore, the paper also presented experimental analyses on the two different real-world scenarios. Although, as the authors mentioned in Conclusions, the experiment is not a kind of `human challenges associated with participating in the market', the given discussions about the experimental results are very impressive.

TECHNICAL QUALITY

- Is there a careful evaluation of the proposed method and the results?

- Is the paper technically sound, with compelling arguments? For example:

* If a new method or algorithm is proposed, is there a careful evaluation,

  and analysis of the results of that evaluation?

* If the paper describes an application, does it describe general lessons

  learned, or ways in which agent technology is valuable for a particular domain?

* If the paper is theoretical, does it provide new insight, or prove properties

  of interest?

* If the paper describes a language or methodology, does it clearly extend

  and improve on current practice?

On a theoretical aspect, the paper gave necessary proofs for important properties to show the soundness of their presented idea. Furthermore, the paper also presented experimental analyses on the two different real-world scenarios. The given discussions about the experimental results are also interesting.

QUALITY OF PRESENTATION

- Is the paper clearly written?

- Does the paper motivate the research?

- Are results clearly described and evaluated?

- Is the paper well organized?

The paper is well organized and clearly written. The paper clearly summarizes their contributions in the end of Introduction and gave necessary examples that would be great help for readers to understand the presented modeling and behaviors of the mechanism.

The authors did an excellent work to keep conciseness of the paper.

-- Summary:
SUMMARY OF REVIEW:

As the authors mentioned in the paper, the presented idea seems the first one that realizes two-sided matching that has truthful and individually rational payment mechanism on the buyers' side as well as providing analysis on possible payment mechanisms on the sellers' side. The paper is well organized. Both the presented theoretical and experimental analyses are significant enough.
---------- End of Review ----------