**Decision Re: TMC-2015-03-0192**

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| |  | | --- | | **pmohapatra@ucdavis.edu**[**通过**](https://support.google.com/mail/answer/1311182?hl=zh-CN)**“manuscriptcentral.com”** | | 5:35 (4小时前)  https://mail.google.com/mail/u/0/images/cleardot.gif |  | **https://mail.google.com/mail/u/0/images/cleardot.gif**  **https://mail.google.com/mail/u/0/images/cleardot.gif** |
| |  | | --- | | 发送至guodeke、 我、 chh0808、 xujia、 emilchenn、 kkkkk5kou  https://mail.google.com/mail/u/0/images/cleardot.gif | | | |

TMC-[2015-03-0192](tel:2015-03-0192), "Cooperative Allocation and Scheduling of Tasks for Minimizing Interval Data Sampling in WSNs  "  
Manuscript Type: Regular  
  
03-Jun-2015  
  
Dear Dr. Guo,  
  
We now have reviews of your above referenced submission to IEEE Transactions on Mobile Computing. Copies of the review comments are enclosed.  
  
Unfortunately, based on these reviews, we are not able to recommend this submission for publication.  
  
You may resubmit your paper, but it will be treated as a NEW submission and given a new log number. If you choose to resubmit your paper please include this original log number (TMC-[2015-03-0192](tel:2015-03-0192)) in your cover letter when submitting and include a summary of the changes you have made in response to the AE and reviewers. We will link your two submissions' records. The new manuscript will then undergo a new review process.  
  
The Associate Editor has the following comments for you:  
  
=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-==-=-=-=-=-=-=-  
Associate Editor  
Comments to the Author:  
(There are no comments. Please check to see if comments were included as a file attachment with this e-mail or as an attachment in your Author Center.)  
  
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We hope that you will find the comments from the reviewers to be useful in your future work.  If you have any questions, please feel free to contact us.  
  
Sincerely,  
  
Prasant Mohapatra, Editor-in-Chief  
Srikanth Krishnamurthy, Associate EIC  
Transactions on Mobile Computing  
[pmohapatra@ucdavis.edu](mailto:pmohapatra@ucdavis.edu)  
  
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Reviewer Comments  
  
Please note that some reviewers may have included additional comments in a separate file. If a review contains the note “see the attached file” under Section III A – Public Comments, you will need to log on to ScholarOne Manuscripts to view the file. After logging in, select the Author Center, click on the “Manuscripts with Decisions” queue and then clicking on the “view decision letter” link for this manuscript. You must scroll down to the very bottom of the letter to see the file(s), if any.  This will open the file that the reviewer(s) or the associate editor included for you along with their review.  
  
Reviewer: 1  
  
Recommendation: Revise and resubmit as “new”  
  
Comments:  
- The authors fail to motivate the reader. After reading Section I, it is not clear what the problem is, why it is important, and what the authors are trying to solve.  
  
- The paper is on task scheduling; however, there is hardly any discussion on related work on this topic when there are quite a number of papers in this area. There are quite a few unrelated references.  
  
- The paper talks about data sampling and data sharing between overlapping tasks. What are the implications?  
  
- The work is concentrated on the improvement of the scheduling algorithm proposed by Feng et al. [9].  
  
- There is too much discussion on proving the complexity of the algorithm and less effort on the experimentation.  
  
- Scheduling and allocation problem should be formally defined. What is the purpose of MAX-DHP problem in relationship with MIN-SA (assume it is used to simplify the proff of Lemma 1)? Definition of MAX-DHP problem should also be given.  
  
- 4.85% is not a significant energy saving as claimed over GA. Also, similar comments on data loss rate.  
  
- There are some unresolved references.  
  
- Poor choice of words (e.g. 'novel' instead of 'new'; 'initiate' instead of 'initial'  'apartment'; 'quintessential')  
  
- There are a number of grammatical errors as well.  
  
Additional Questions:  
1. Which category describes this manuscript?: Research/Technology  
  
2. How relevant is this manuscript to the readers of this periodical? Please explain under Public Comments below. : Interesting - but not very relevant  
  
1.  Please explain how this manuscript advances this field of research and/or contributes something new to the literature. : The authors propose algorithms for minimizing the total length of sampling intervals through data sharing amongst overlapping tasks.  
  
2. Is the manuscript technically sound? Please explain under Public Comments below. : Appears to be - but didn't check completely  
  
1. Are the title, abstract, and keywords appropriate? Please explain under Public Comments below. : Yes  
  
2. Does the manuscript contain sufficient and appropriate references? Please explain under Public Comments below. : Number of references are excessive  
  
3. Does the introduction state the objectives of the manuscript in terms that encourage the reader to read on? Please explain under Public Comments below. : No  
  
4. How would you rate the organization of the manuscript? Is it focused? Is the length appropriate for the topic? Please explain under Public Comments below. : Could be improved  
  
5. Please rate the readability of this manuscript. Please explain your rating under Public Comments below. : Difficult to read and understand  
  
6. Should the supplemental material be included? (Click on the Supplementary Files icon to view files): Does not apply, no supplementary files included  
  
7. If yes to 6, should it be accepted:  
  
8. If this manuscript is an extended version of a conference publication, does it offer substantive novel contributions beyond those of the previously published work(s)- i.e. expansion of key ideas, examples, elaborations etc.  \*New results are not required\*: Not applicable  
  
Please rate the manuscript. Please explain under Public Comments below. : Fair  
  
  
Reviewer: 2  
  
Recommendation: Revise and resubmit as “new”  
  
Comments:  
The paper studies how to optimize task scheduling and allocation in a continuous sampling environment. The problem is studied before as indicated in Ref. [9] on a single node. The paper proposes 2-factor approximation algorithms for the scheduling problem and further includes 3 algorithms for the allocation problem.  
  
1. The motivation is not quite strong. Difference between Ref. [9] is not quite obvious. A similar 2-factor approximation algorithm is also proposed by [9]. Although [9] uses tasks T\_1, T\_2,.... for a single node, the algorithm can be readily extend to the network given T\_i represents the different tasks. Is it true that - the scheduler only sees different T\_i (s) no matter which nodes they have been assigned ? If this perception is wrong, it is better to clearly point out in the paper. After reading this paper, the difference between [9] is vague. The authors should clearly state, and elaborate the difference between the two works.  
  
2. On the contribution of algorithm - the task scheduling, allocation problems are well-studied topics in general. The algorithm presented in the paper works in WSNs whereas their performance in the general setting is unknown. At least, the literature review doesnt provide any information. For example, is the 2-factor approximation algorithm the best one ? Are there any inapproximation ratio exists for the problem to derive polynomial-time algorithms? What are other algorithms proposed and what are their ratios and complexity ? Answers to these questions are expected as they will give readers a background how to evaluate your algorithm design in a general setting.  
  
3. It seems the allocation and scheduling algorithms are centralized. However, how to disseminate decisions from the central controller and expected message overhead are not mentioned in the paper. These are equally important information since the main claim of this paper is the design of these algorithms in a network.  
  
4. A little bit too many symbols - some self-defined, weird ones too which are not commonly used. This degrades the readability greatly. The reviewer suggests the authors minimize the usage of these symbols rather than inherit from [9] directly.  
  
5. Theorem 3 - proofs, please give the general case rather than proving by examples and you may always explain the proofs through an example later. Some other proofs in this paper may have the same problem.  
  
6. On presentation problems - [?], reference not added, several spots; t.count++ -> t.count = t.count + 1; Fig. 7 doesnt display so well on black-white print-outs; the procession of construction -> the process of construction; replaced by the novel task-> replaced by the new task.  
  
Overall, the reviewer encourage the authors to revise the aforementioned problems and re-submit to TMC.  
  
Additional Questions:  
1. Which category describes this manuscript?: Research/Technology  
  
2. How relevant is this manuscript to the readers of this periodical? Please explain under Public Comments below. : Relevant  
  
1.  Please explain how this manuscript advances this field of research and/or contributes something new to the literature. : The paper proposes two 2-factor approximation algorithms for continuous task scheduling and allocation in WSN.  
  
The paper proposes optimization algorithms for continuous sampling while considering the entire network. Memory space is considered on energy-constrained sensor nodes.  
  
It is a "niche" topic - both single sensor case and job scheduling, allocation problems are studied before.  
  
2. Is the manuscript technically sound? Please explain under Public Comments below. : Appears to be - but didn't check completely  
  
1. Are the title, abstract, and keywords appropriate? Please explain under Public Comments below. : Yes  
  
2. Does the manuscript contain sufficient and appropriate references? Please explain under Public Comments below. : References are sufficient and appropriate  
  
3. Does the introduction state the objectives of the manuscript in terms that encourage the reader to read on? Please explain under Public Comments below. : Could be improved  
  
4. How would you rate the organization of the manuscript? Is it focused? Is the length appropriate for the topic? Please explain under Public Comments below. : Satisfactory  
  
5. Please rate the readability of this manuscript. Please explain your rating under Public Comments below. : Readable - but requires some effort to understand  
  
6. Should the supplemental material be included? (Click on the Supplementary Files icon to view files): Does not apply, no supplementary files included  
  
7. If yes to 6, should it be accepted:  
  
8. If this manuscript is an extended version of a conference publication, does it offer substantive novel contributions beyond those of the previously published work(s)- i.e. expansion of key ideas, examples, elaborations etc.  \*New results are not required\*: Not applicable  
  
Please rate the manuscript. Please explain under Public Comments below. : Fair  
  
  
Reviewer: 3  
  
Recommendation: Author Should Prepare A Major Revision For A Second Review  
  
Comments:  
1. Since the allocation and scheduling problems are tightly coupled, it is more meaningful to consider the joint optimization (as defined in Definition 5) rather than considering the two problems separately. That is why "random" and "prune" allocation always result in poor performance.  
  
2. The scheduling algorithm is simply a greedy one, which lacks of novelty. Its performance is also straightforward.  
  
3. The literature review is far from sufficient. Only one work ([9]) is mentioned a little bit in the paper. The basic ideas of all important related works should be carefully discussed to provide the background of the problem under investigation. It is better to have a separate section for related works.  
  
4. In theorem 1, the problem "MAA-SAA" is not defined. It should be MIN-SAA. In the proof, there are also typos "MAA-SAA" and "MAA-SA". Please check throughout the paper to ensure correcting all such errors.  
  
5. In page 4, line 34 (left column), check the sentence "As illustrated in Fig.".  
  
6. There are citation errors (i.e., some citations are shown as question marks) throughout the paper, such as page 9, line 24 (right column) and page 12, line 17 (left column). Please check and correct carefully.  
  
7. The presentation and organization of the entire paper can be improved to be in a more lucid manner.  
  
Additional Questions:  
1. Which category describes this manuscript?: Research/Technology  
  
2. How relevant is this manuscript to the readers of this periodical? Please explain under Public Comments below. : Relevant  
  
1.  Please explain how this manuscript advances this field of research and/or contributes something new to the literature. : The authors of the paper studied cooperative task allocation and scheduling problem in wireless sensor networks with the purpose to minimize the entire interval data sampling. Several schemes/algorithms are proposed for the scheduling and allocation problems respectively and the performance are examined by experiments in small-scale testbed and simulations in TOSSIM.  
  
2. Is the manuscript technically sound? Please explain under Public Comments below. : Appears to be - but didn't check completely  
  
1. Are the title, abstract, and keywords appropriate? Please explain under Public Comments below. : Yes  
  
2. Does the manuscript contain sufficient and appropriate references? Please explain under Public Comments below. : Important references are missing; more references are needed  
  
3. Does the introduction state the objectives of the manuscript in terms that encourage the reader to read on? Please explain under Public Comments below. : Could be improved  
  
4. How would you rate the organization of the manuscript? Is it focused? Is the length appropriate for the topic? Please explain under Public Comments below. : Could be improved  
  
5. Please rate the readability of this manuscript. Please explain your rating under Public Comments below. : Readable - but requires some effort to understand  
  
6. Should the supplemental material be included? (Click on the Supplementary Files icon to view files): Does not apply, no supplementary files included  
  
7. If yes to 6, should it be accepted:  
  
8. If this manuscript is an extended version of a conference publication, does it offer substantive novel contributions beyond those of the previously published work(s)- i.e. expansion of key ideas, examples, elaborations etc.  \*New results are not required\*: Not applicable  
  
Please rate the manuscript. Please explain under Public Comments below. : Fair