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KSII Transactions on Internet and Information Systems - Decision on Manuscript ID TIIS-RP-2016-Nov-1679

5 封邮件

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2017年3月17日 上午
3:44

回复: alisson@unilab.edu.br

收件人: tang.zhaoshu@gmail.com

16-Mar-2017

Dear Mr. Zhaoshu Tang:

Manuscript ID TIIS-RP-2016-Nov-1679 entitled "TOUSE: A Fair User Selection Mechanism Based on Dynamic Time Warping for MU-MIMO Networks" which you submitted to the KSII Transactions on Internet and Information Systems, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

I am happy to inform you that the reviewer(s) have recommended publication, but also suggest some revisions to your manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript. Please go through the reviewers' comments carefully and then prepare for the revised paper and authors' response. Your revised paper will not be guaranteed to be accepted for publication in the TIIS journal. The editor and reviewers will again review the revised paper and authors' response.

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Because we are trying to facilitate timely publication of manuscripts submitted to the KSII Transactions on Internet and Information Systems, your revised manuscript should be uploaded "by 15-Apr-2017." If it is not possible for you to submit your revision in the deadline, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to the KSII Transactions on Internet and Information Systems and I look forward to receiving your revision.

Sincerely,

Prof. Antonio Alisson P. Guimarães
 Editor,
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[Reviewer(s)' Comments to Author]:

Reviewer: 1

Comments to the Author

For a downlink multi-user MIMO system, the paper proposed a new scalable and fair user selection scheme, namely TOUSE, based on dynamic-time-warping-based user selection mechanism. Simulation results presented in the paper confirmed the effectiveness of the proposed method. This reviewed concerns the following points:

- 1) By my knowledge, there are a lot of works on the topic of the paper. Unfortunately, review on these existing works is not enough.
- 2) In main part of the paper, that is, Section 3, the TOUSE is described. In subsection 3.2, an important concept, effective SNR, is introduced, while this concept seems not to be used in the proposed algorithm described in subsection 3.5. Also content given in subsection 3.3 is not used in the algorithm. My question is: what is relationship among in Subsections 3.2, 3.3 and 3.4?
- 3) In the proposed scheme, the SINR, given in (7), or MCS-Rate should be feedbacked to the AP. In the meantime, the AP still need SCI to construct the beamforming vectors. Thus, compared to conventional scheme, overhead of the proposed scheme should be increased. How to evaluate this performance loss?
- 4) Writing of the paper could not be satisfied as a journal paper. The follows are examples:
 - a) What is mean of AP?
 - b) What is mean of "\$\mathbf{P}\$" or "\$P\$"?
 - c) What is assumptions on statistic of channel vectors? This review believes that different assumptions will have different schemes.
 - d) A clear definition of term "effective SNR" should be given.
 - e) Reference on Table 1 should be presented.
 and so on.

Based on considerations above, this reviewer could not recommend this paper to be published.

Reviewer: 2

Comments to the Author

In this paper, the authors have presented a TOUSE user selection algorithm for downlink MU-MIMO. Simulation shows that TOUSE can yield $1.5 \times$ throughput gain over traditional scheme in three antennas AP scenarios. However the author doesn't specify the difficulties in TOUSE algorithm implementation.

Along with the author has to do the following corrections and add some related contents as required.

1. All matrixes should be notated using bolded capital letters.
2. In Page2, line 32 can be changed as, Channel State Information (CSI) or Signal-Noise Ratio (SNR),
3. In Page2, line 35 "Most solutions select the optimal beamforming group based on understanding the full CSI of all potential users:
4. In Page 3, Line 38, the abbreviation can come after the elaborated word.
5. In Page 3, line 53, 54 typo error.
6. The ZF beamforming consume huge transmission power. Justify...
7. The reference of ZFBF-EP is not given & the ZFBF-EP significance is also not explained. (page 4, line 10)
8. Page 4, line 35 .. What is channel time cost of existing scheme?
9. What does 'K' implies?
10. What is a NDP frame?
11. Typo errors in equation (6)
12. How the author has arrived to equation (7) and what is the factor M represents?
13. Typo error at Page 7 line 26.
14. What is T_0 in equation (8)
15. What is a channel access time X_u . How it is considered in simulation?
16. In Fig 3, Jain's fairness index shows trough and crest across the increase in number of users.. Justify.
17. In Fig 4, when number of antenna is 3,6,7, the proposed TOUSE shows lower throughput in comparison with other algorithm. But this situation not persists in other cases of antenna counts. Justify
18. The related work can come along with Introduction section.
19. References are not cited in ascending order.
20. Typo and grammar errors should be corrected throughout the manuscript

Reviewer: 3

Comments to the Author

The authors worked on the MU-MIMO user selection research which is a very hot and is of great importance for both the theoretical research and practical implementation. The focus of this work is the fairness and throughput improvement. I appreciate the efforts that the authors put on this area, and hope the contributions can be published after some refinements. I have a few recommendations before this work can be published in the journal.

1. The introduction is very generic. Since MU-MIMO has already been standardized and implemented in the IEEE 802.11ac systems and has been becoming widely deployed in real world, it is definitely much better if the 802.11ac system perspective can be merged into the main theme in the writing, at least in the introduction.

2. Usually, the related work section is right after the introduction, and I find the authors put this in section 5. While this is acceptable, it is still necessary to put a couple of key research works in the introduction to allow the readers to have a big picture and know the key milestones at the very beginning during the reading.

By go through the papers cited, I believe there is still a need to emphasize what the very latest and key efforts are for MU-MIMO user selection. For example, the followings are two papers in 2016 that focused on the very similar topic.

[1] X. Ma, Q. Gao, V. Marojevic and J. H. Reed. "Hypergraph matching for MU-MIMO user grouping in wireless LANs." *Ad Hoc Networks* 48 (2016): 29-37.

[2] T. Maruko, "Efficient combination of multi-user MIMO THP and user selection based on spatial orthogonality", 2016 WCNC.

Especially article [1], other than its theoretical contributions from graph theory, it implements efficient algorithms in the practical 802.11ac systems with measurements considering both the throughput and user air time fairness. Because the authors in this paper focus on the practical algorithm design, adding [1] in both the introduction and related work sections will make the state-of-art more convincing for the readers.

Article [2] is a simulation-based work and is also very related to the topic in this paper, but it can be added only in the related work section since Tomlinson Harashima precoding is not used here.

3. I would suggest a brief discussion section about how the proposed work may be applied in the WiFi or further commercial systems.

4. Please double check the typos in the writing and equations. For example, the square in eq. (6).

5. In section 4, please specify the parameters and channel statistics used for the simulation, and explain explicitly why those parameters are selected in that way.

Reviewer: 4

Comments to the Author

The authors investigate the "TOUSE: Fair User Selection Mechanism Based on Dynamic Time Warping for MU-MIMO Networks".

Authors have shown novelty in this paper; however, they should revise their paper with minor corrections.

1. There are quite a number of grammatical and sentence structure errors.
2. The contribution of this work should be strongly emphasized, and justified.

Reviewer: 5

Comments to the Author

This paper presents an algorithm for user selection in the context of MU-MIMO, whose aim is obtaining high throughput while achieving fairness among users. First, the achievable rate is estimated by using the effective SNR, hence reducing the overhead compared to CSI feedback. Next, users are selected based on their required transmission times. The proposed algorithm is compared to existing ones, where it is shown that it achieves higher fairness while providing similar data rates.

I have several concerns that should be addressed before publication, so I recommend a major revision. Specifically, the proposed algorithm should be explained in more detailed. For example, it is said that the candidate users are selected by correlating their transmission times with the currently selected users, following the idea of dynamic time warping, which seems to correspond to "Select an optimal c_k in C matching S " in Algorithm 1. However, it is not clear how this is actually carried out, so more details would be desirable. Similarly, more details should be provided regarding the constraints (9) and (10), how they are exactly obtained (are there some heuristics there?) and more explanations about their meaning. For instance, (10) is illustrated with an example of user1 requiring 1s and user2 100s, so they should not be served together in order to maximize the efficiency of the resources. It is however not clear if (10) is actually avoiding that, as user1 would satisfy the constraint, e.g., if $M=K=2$ and user2 already belonging to the beamforming group. To sum up, this part is the core of the paper so it should be as detailed as possible.

More comments:

- Throughout the paper the word capacity is used to referred to the achievable rate. However, the capacity is a fundamental limit relative to the channel and independent of the specific strategy. Therefore, the word capacity should be replaced by, e.g., achievable rate, throughput or any other similar word.
- In Section 3.2., you talk about the effective SNR, which depends on the BER. Is this BER coded or uncoded? In the latter, is it practical? Could it be modified to include the coded BER?
- Eq. (7): How is this expression obtained? How does it relate to the true SINR? i.e., can you state that it is bigger than the true one? Otherwise, by selecting the rate following Table 1 the true BER could be compromise.
- Section 3.3, point 3: what do you mean by "system hardware configurations"?
- In the simulations the bar plots cannot be interpreted in black and white. Using different filling patterns would help.
- In the simulations, some details about the system setting are missing. Are you considering the 802.11 standard? This is actually a bit confusing in the paper, since at first a general MU-MIMO scenario is introduced in general, but at some point it seems to be particularized to a WLAN. It should be clear from the beginning if the considered scenario is a WLAN or something more general.
- I find it a bit weird that the related work is explained at the end of the paper. It would be more consistent with the flow of the paper if Section 5 is merged with the introduction.

Typos:

- There are many typos in the paper, so I will not enumerate here all. I suggest reading carefully the paper to correct them. The English could also be improved.
- Some terms are used without being defined, such as AP or MCS.

-END-

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2017年3月17日 上午10:06

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2017年3月17日 上午10:43

真快啊！没问题，好好改一下就行！

提交之前发出来看看哈。

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覃振权

发自我的 iPhone

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2017年3月17日 上午10:57

这个是从网站上扒下来的PDF版本，方便看一些。

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祝好

唐兆树

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Subject: Re: KSII Transactions on Internet and Information Systems - Decision on Manuscript ID TIIS-RP-2016-Nov-1679

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