

From: ACM Transactions on Autonomous and Adaptive Systems onbehalf@manuscriptcentral.com

Subject: TAAS - Manuscript TAAS-22-0060 Decision

Date: 17. February 2023 at 12:20

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Dear Professor Danny Weyns:

Thank you again for your above submission to the ACM Transactions on Autonomous and Adaptive Systems, which was managed by associate editor Guest Editors SEAMS'22. The feedback from the anonymous reviewers of your manuscript are included at the end of this letter.

The associate editor's recommendation is for your manuscript to undergo a MINOR REVISION before it can be re-considered for publication in TAAS. Therefore, I invite you to revise your manuscript accordingly and provide a detailed letter indicating how you have revised the paper in response to each of the reviewers' comments by 18-Apr-2023.

To revise your manuscript, please log on to <https://mc.manuscriptcentral.com/taas> and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

You will be not be able to make your revisions on the originally submitted version of the manuscript. Instead, please revise your manuscript using a word processing program and save it on your computer. It may be helpful to reviewers if you are also able to include a version of your revised paper with the changes highlighted on your manuscript (for example, by using the 'track changes' mode in Microsoft Word or by using bold or coloured text, or change bars.).

Once the revised manuscript is prepared, you can upload it and submit it through your Author Center.

When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript (or you can also upload as a separate cover letter). In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Although we aim to facilitate timely publication of manuscripts submitted to the ACM Transactions on Autonomous and Adaptive Systems, if you are unable to re-submit your paper to the ACM Transactions on Autonomous and Adaptive Systems within two months of this letter, then we may have to consider any future revised paper as a new submission.

Once again, thank you for submitting your manuscript to the ACM Transactions on Autonomous and Adaptive Systems and we look forward to receiving your revised manuscript.

Sincerely,
Bradley Schmerl on behalf of Danny Weyns, Editor in Chief
ACM Transactions on Autonomous and Adaptive Systems

Associate Editor Comments to Author:

Associate Editor
Comments to the Author:
(There are no comments.)

Reviewer(s)' Comments to Author:

Reviewer: 1

Recommendation: Minor Revision

Comments:

Overall, this paper is very well written.

The paper conducts a very important survey of both academia and industry related to self-adaptation, and the results of the survey of a large number of practitioners are very valuable.

The survey procedures well designed, the results are well summarized with respect to a number of important questions, and the findings are very interesting.

Here are some comments to improve this paper.

At the end of Section 1, the difference from the preceding paper [46] is briefly mentioned, but it is not clear. Please describe the difference clearly.

Each RQ is carefully motivated in section 1.1. and key insights and observations are well summarized in sections 3 and 4.

However, the analysis of RQ2 seems to be shallower than the others. For example, the difference between practitioners' and researchers' perception of the constitutes of self-adaptation is a very interesting topic, but it seems to be rarely discussed in sections 3 and 4. The results of the RQ2 survey show that a certain number of practitioners focus only on monitoring and analysis. If it means that only simple runtime monitoring is considered as self-adaptation, it may be a difference in perception. It would be interesting to discuss this point and summarize insights and observations.

The third paragraph of section 2.2 refers to the bias caused by the example system introduced in the questionnaire. The introduction in the questionnaire introduces keywords that ranked high in each survey results, such as auto-scaling, Kubernetes, and AWS. Please discuss the impact of this bias in Section 5.

Minor comments:

* Section 3.1.2:

"embedded, cyber-physical, IoT systems"

-> "embedded/cyber-physical/IoT"

"The dominant focus is monitoring, analytics and control,"

-> "The dominant focus is monitoring/analytics/control,"

* Section 3.1.4:

"project manager/coordinator"

-> in Fig. 4, "project manager/lead" is used. It would be better to unify the expressions in the table and in the text.

* Section 3.3.1:

"Platform layer (infrastructure, execution platform, etc.) was mentioned 11 times"

-> Platform layer seems to be 13 in the Table 7

* Table 8:

"Trigger for adaptation 99"

-> Is it 78?

* Table 15:

"People and process issues 19"

-> Is it 25?

* Section 3.5.6:

"Thirty-three of 166 participants (17.9%)"

-> Why only 166 people here, while the others are basically based on 100?

It seems to target all practitioners (not them with experience in engineering SAS). Please explain it.

What would happen if we focused only on practitioners involved in self-adaptive systems? Wouldn't that comparison lead to more interesting findings?

"108 of the participants (58.7%)"

-> If the population is 166, then 108 would be about 65%.

"In summary, almost half of the participants believe that they would benefit from support of researchers to address some of the problems they face with engineering self-adaptive systems."

-> I could not follow the conclusion. According to one previous sentence, 65% practitioners do not need support from researchers. If so, this sentence seems to be an overstatement. Please check and fix it if necessary. This conclusion is referred from many part in this paper, so please fix them all if this sentence changes.

Additional Questions:

Review's recommendation for paper type: Tutorial / survey paper

Should this paper be considered for a best paper award?: Yes

Does the paper present innovative ideas or material?: Yes

In what ways does this paper advance the field?: This paper aims to describe the state of practice of self-adaptation in industry and introduce a large-scale survey conducted by authors with 184 practitioners.

The paper conducts a very important survey of both academia and industry related to self-adaptation, and the results of the survey of a large number of practitioners are very valuable.

Is the information in the paper sound, factual, and accurate?: Yes

If not, please explain why.: The survey procedures well designed, the results obtained from 184 practitioners are well summarized with respect to a number of important questions.

Rate the paper on its contribution to the body of knowledge to this field (none=1, very important=5): 5

Rate how well the ideas are presented (very difficult to understand=1 very easy to understand =5): 5

Rate the overall quality of the writing (very poor=1, excellent=5): 4

Does this paper cite and use appropriate references?: Yes

If not, what important references are missing?:

Should anything be deleted from or condensed in the paper?: No

If so, please explain.:

Is the treatment of the subject complete?: Yes

If not, What important details / ideas/ analyses are missing?:

Please help ACM create a more efficient time-to-publication process: Using your best judgment, what amount of copy editing do you think this paper needs?: Light

Most ACM journal papers are researcher-oriented. Is this paper of potential interest to developers and engineers?: Yes

Reviewer: 2

Recommendation: Accept

Comments:

This paper presents results of large-scale survey of practitioners in industry utilising self-adaptive system technologies. The paper is very well written and easy to read. In particular, I believe the authors meet their objective of narrowing the gap between academia and practice. As an academic, I found this paper gave a great overview of the key challenges faced in industry and issues that arise when self-adaptive systems are developed/deployed. The technical details of the survey are well described, and all raw survey data has been made publicly available by the authors.

Minor comments:

- Page 12: Broken table reference in footnote
- Page 24: reword last sentence "have always problems"
- Page 35: Fifth paragraph reword sentence "face at least sometimes risks"
- Some citations have inconsistencies. e.g. full names instead of initials [11], [14], [20],

Additional Questions:

Review's recommendation for paper type: Tutorial / survey paper

Should this paper be considered for a best paper award?: No

Does the paper present innovative ideas or material?: Yes

In what ways does this paper advance the field?: Yes, it provides practitioners insight into key problem areas for which self-adaption is applied in industry. This is particularly helpful for aligning research focus as well as gaining a general knowledge of the current state of the art in industry.

Is the information in the paper sound, factual, and accurate?: Yes

If not, please explain why.:

Rate the paper on its contribution to the body of knowledge to this field (none=1, very important=5): 4

Rate how well the ideas are presented (very difficult to understand=1 very easy to understand =5): 5

Rate the overall quality of the writing (very poor=1, excellent=5): 5

Does this paper cite and use appropriate references?: Yes

If not, what important references are missing?:

Should anything be deleted from or condensed in the paper?: No

If so, please explain.:

Is the treatment of the subject complete?: Yes

If not, What important details / ideas/ analyses are missing?:

Please help ACM create a more efficient time-to-publication process: Using your best judgment, what amount of copy editing do you think this paper needs?: Light

Most ACM journal papers are researcher-oriented. Is this paper of potential interest to developers and engineers?: Yes

Reviewer: 3

Recommendation: Accept

Comments:

The paper presents the results of a survey on industry perceptions of self-adaptive systems. The survey involved 186 active practitioners from different industries across the globe, providing insight into the motivations, problems, difficulties, and risks associated with self-adaptation. Based on the survey data, the authors conducted systematic data analysis and provided an overview of the current state of self-adaptation in practice, which can help researchers align their work with industrial needs and practitioners improve their practices. These insights may also inform future collaborations between academia and industry and provide opportunities for the application of self-adaptation in practice.

The paper is well-written, and the methodologies used for collecting and analysing data are well-explained and sound. The discussion and observations effectively present the findings derived from the collected data. I found the paper engaging to read, and I am confident that the insights gained from this survey will facilitate better collaboration between academia and industry and provide guidance for future research in the field of self-adaptive systems.

Minor issues:

- 1) The first two paragraphs in section 1.1, which discuss the objective, seem to repeat themselves. Perhaps the text could be reorganised to make it clearer, or bullet points could be used.
- 2) For the matter of consistency, I wonder why Q5.1 was not presented in a table.
- 3) The authors invited 355 practitioners and provided information about their geographic origins in footnote 2. However, I couldn't find these details for the 184 practitioners who actually participated in the survey. This is important as it would be difficult to claim a worldwide view if the participants are solely from Europe.
- 4) I am not sure about the purpose of Q4.6, which asks for support required from researchers. I wonder if this question is intended to differentiate support from engineers versus researchers. In my opinion, engineers may offer a solution without necessarily fully comprehending the root causes of a problem, while researchers focus more on understanding the underlying causes of a problem. It's unclear to me whether most practitioners need a quick and easy solution or a better understanding of the problem to facilitate a more effective solution design.

Typos:

- 1) In the abstract: line 18 are referred as -> are referred to as
- 2) Page 3, section 1.1, line 20: investigates and these issues -> investigates these issues.
- 3) P17 3.4.2, line 47 with use analyse conditions -> with use to analyse conditions
- 4) Footnote 8: as shown in Table ??

Additional Questions:

Review's recommendation for paper type: Tutorial / survey paper

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In what ways does this paper advance the field?:

Is the information in the paper sound, factual, and accurate?: Yes

If not, please explain why.:

Rate the paper on its contribution to the body of knowledge to this field (none=1, very important=5): 5

Rate how well the ideas are presented (very difficult to understand=1 very easy to understand =5): 5

Rate the overall quality of the writing (very poor=1, excellent=5): 5

Does this paper cite and use appropriate references?: Yes

If not, what important references are missing?:

Should anything be deleted from or condensed in the paper?: No

If so, please explain.:

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