Dear Editor:

Thank you for allowing us to revise our manuscript entitled “﻿﻿Improved General Attribute Reduction Algorithms”. We appreciate the editor and reviewers very much for the constructive comments and suggestions on our manuscript.

The summary of the revisions made is as follows.

1. We have adopted the t-test method to evaluate the reducts generated by reduction algorithms in classification accuracies (line 706).

2. We have rectified many errors of math symbols usage and improved the typesetting of equations, including but not limited to Definitions 3, 4, 5, and 6.

3. We have revised the paper in missing/wrong articles to improve the readability/language quality, including but not limited to Theorems 2, 3 and Definition 4.

4. We have revised the description of background and structure of the paper. Please see lines 66-102.

5. We have adjusted the outline of section 2 and 3(lines 104-107 and 197-219).

Answers to Reviewers:

To reviewer #1:

1. Moreover, I think that the employed datasets are not associated, so such "Average" of values over these datasets has no semantic explanation, and it is not reasonable to support the authors' conclusion. I strongly suggest that the authors use the significance test to compare the average 10-fold cross-validation based accuracies over each dataset.

**Answer: Thanks for your advice. We used t-test to do the evaluation of reducts generated by the proposed algorithms, and the results indicate that, in statistics inference, there is no difference between two proposed algorithms and the existing reduction algorithms. As a result, we revised our conclusions in the paper. Please see lines 706-725 and 736-741.**

To reviewer #2:

Comments and answers:

1. the "significance test" does not mean the feature selection methods based on attribute significance. In fact, the reviewer wants to see the significance test result based on your "mean\pm std" over each dataset, such as t-test, Friedman test or others.

**Answer: Thanks for your reminding. We evaluated our algorithms by using the t-test method. Detail information about t-test results can be found in line 706.**

To reviewer #3:

Comments and answers:

- Originality:

1. The hash functions, (pages 16-17). Taking into account the answer to my previous objections about hash functions and the related changes in the manuscript: I would hesitate to call them hash function. They create keys for hashing. The keys are then hashed by a function implemented in python's dictionary. I recommend use notation key(), and call them key converter / key generator.

**Answer: Thanks for your advice! We have revised related content. Please see line 383.**

2. English langue has been improved but the language quality is still quite bad, mainly in missing/wrong articles. I recommend the authors to hire a native speaker to help them with the grammar check

**Answer: Thanks for your reminding. We have revised the manuscript carefully to rule out the above problems.**

3. other issues:

line 45: easily understanding -> easily understandable

line 88-92: the sentence is too long and hard to understand

line 295: missing = in (4)

line 352: doesn't -> does not

line 444: ''/'' -> ``/''

line 620: Figure 2 shown -> Figure 2 shows

math symbols:

\langle, \rangle are better symbols for angle brackets than < > IND, POS, BND, max, argmax, etc should not be in italics (they are not variables, they are exactly given sets/operators).

spacing in math expressions:

for example: line 129: there should be spaces around |, and no spaces inside angle brackets.

line 388: "Excepts, it is notable that hash functions are also the

data structure in programming." -- I don't understand what you want to say.

fig 1. avoid using the colors, line separators would be better here.

**Answer: Thanks for pointing out our negligence. We have rectified the above problems.**

other issues:

|  |  |
| --- | --- |
| line 45: easily understanding -> easily understandable | Please see line 43. |
| line 88-92: the sentence is too long and hard to understand | Thanks for your feedback, we have removed it. |
| line 295: missing = in (4) | Please see Definition 3 in page 12. |
| line 352: doesn't -> does not | Please see line 341. |
| line 444: ''/'' -> ``/'' | Please see line 448. |
| line 620: Figure 2 shown -> Figure 2 shows | Please see line 625. |

math symbols:

\langle, \rangle are better symbols for angle brackets than < > IND, POS, BND, max, argmax, etc should not be in italics (they are not variables, they are exactly given sets/operators).

**We have revised all of the mentioned symbols and checked all the symbols in equations.**

spacing in math expressions:

|  |  |
| --- | --- |
| line 129: there should be spaces around |, and no spaces inside angle brackets. | Please see line 122. In addition, we revised all the related usage in the paper. |
| line 388: "Excepts, it is notable that hash functions are also the data structure in programming." -- I don't understand what you want to say. | Thanks for your feedback, we have removed it. |
| fig 1. avoid using the colors, line separators would be better here. | Please see line 515. |