

# Review of: "The functional unit of neural circuits and its relations to eventual sentience of artificial intelligence systems"

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Potential competing interests: No potential competing interests to declare.

The authors study the functional unit of neural circuits and its relations to eventual sentience of artificial intelligence systems. The results of the manuscript has desirable innovations and should attract a broad readership from researchers. However, the manuscript can NOT be published in its current form, and can be considered after major revisions because of the following issues:

1. Writing and the grammatical error should be checked for correction, the English expression should be improved more.
2. The authors should check the MS carefully. Some references contain errors, missing or incorrect information, and inconsistent formatting, and misspelled author names. References should thus be corrected with the best care.
3. It is necessary to describe more about this model from the physical point of view. All the formulas are not labeled, so I can't find the "formula (1)" described in the middle of page 8. And please check that the formulas in the manuscript are correct, e.g. the first formula on page 9.
4. Many Figures are not clear, such as Figures 1 and 4, and the corresponding links do not open. The authors should check all Figures for the convenience of readers.
5. The writing in general needs to be improved. Some figure captions are just a sentence long. Figure captions need to be made more self contained. In addition to what is shown for which parameter values, one should preferably write a sentence or two saying what is the main message of each figure. It would also improve the paper if the figure captions would be made more self contained. In addition to what is shown for which parameter values, one could also consider a sentence or two saying what is the main message of each figure.
6. In the first equation on page 6, the each term is selected with "+" or "-". how are they represented in Figure 2 ?
7. To attract more audiences and build deep relationships to the existed references, it is much better if some recent studies about .....Working memory depends on the excitatory-inhibitory balance in neuron-astrocyte network. Chaos, 2023, 33(1): 013127; Critical State of Energy-Efficient Firing Patterns with Different Bursting Kinetics in Temperature-sensitive Chay Neuron, Nonlinear Dynamics, 2023, Doi:10.1007/s11071-023-08700-7..... are cited.
8. In Page 9, there are errors in these formulas, such as not displaying the root sign in the formula.
9. The introduction of the revised version makes me confused. The introduction should be reorganized in terms of narrativity. I recommend authors to have a more abstracted and concentrated Introduction.
10. In the Introduction, the citation of literature is not reasonable. There are cases where the description and citation do

not match, and authors should read the introduction section carefully and check whether the literature citation is reasonable.

11. In the Conclusion, the conclusion of the manuscript has not been fully discussed, it is necessary to describe more about the results.