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April 15th 2025

Dear Editor-in-chief:

We are pleased to submit an original research article entitled *Numerical splitting schemes as the cornerstone for mini-batch optimization* for consideration for publication in *Journal of Machine Learning for Modeling and Computing*.

In this manuscript, we investigate the effects of using non-interpolating mini-batches for machine learning. Indeed, optimizers often rely on the interpolating condition for convergence and this condition is not fulfilled in several situations of practical interest.
Using benchmarks, we exhibit undesirable behaviors which we can interpret using operator splitting as a lack of balance.
We then propose a simple balancing method based on the technique Speth *et al* used in the context of PDE. This technique is able to correct most of the usual optimizers and is proved to be very efficient.

We therefore think our work has two main interests:

1. highlighting undesirable convergence properties for usual mini-batch optimizers. These properties are often overlook in practice.
2. Proposing a simple but efficient technique to solve the issue. This technique is general enough to be adaptable to the most popular optimizers.

This manuscript has not been published and is not under consideration for publication elsewhere. We have no conflicts of interest to disclose.

Thank you for your consideration!

Sincerely,

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