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cp3-bench: A tool for benchmarking symbolic regression algorithms tested with cosmology

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In a recent paper we presented a new benchmark tool for symbolic regression and tested it with cosmology datasets. This new benchmark tool is easy to use, and we would like to spread the word and encourage other people to try it in their respective field where applicable. Out of the box it has ten different machine learning algorithms, but we also encourage the community to add their own methods to the framework and expand the capabilities. In this talk I will discuss how it works and the paper we published with a test application in cosmology. We find no indication that performance of algorithms on standardized datasets are good indications of performance on cosmological datasets. This suggests that it is not necessarily prudent to choose which symbolic regressions algorithm to use based on their performance on standardized data. Instead, a more prudent approach is to consider a variety of algorithms. Overall, we find that most of the benched algorithms do rather poorly in the benchmark and suggest possible ways to proceed with developing algorithms that will be better at identifying ground truth expressions for cosmological datasets. As part of this publication, we introduce our benchmark algorithm cp3-bench which we make publicly available at <https://github.com/CP3-Origins/cp3-bench>.

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