XIV SERBIAN-BULGARIAN ASTRONOMICAL CONFERENCE

23 – 27 September, 2024, Vrnjačka Banja, Serbia Book of Abstracts, eds. M.S. Dimitrijević, E. Semkov, Z. Simić, G. Damljanović, M. Dechev

http://doi.org/10.69646/14sbac05a

NEW DATA ANALYSIS ALGORITHMS BASED ON SPLINE VERSIONS OF KOLMOGOROV ARNOLD NETWORKS

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We study some new approaches to Neural networks based on spline versions of the Kolmogorov-Arnold Networks, which have been introduced and studied recently. We explore the flexibility of this new approach, for solving some particular problems of Machine learning and AI. A main novelty in our approach is that we explore KANs based on multivariate polysplines.

References:

- [1] B. Igelnik and N. Parikh. Kolmogorov's spline network. IEEE Transactions on Neural Networks, 14(4):725--733, 2003.
- [2] Johannes Schmidt-Hieber, The Kolmogorov-Arnold representation theorem revisited, Neural Networks, Volume 137, May 2021, Pages 119-126.
- [3] Andrew Polar, Michael Poluektov, A deep machine learning algorithm for construction of the Kolmogorov-Arnold representation. Engineering Applications of Artificial Intelligence, Volume 99, March 2021, 104137
- [4] O. Kounchev, Multivariate Polsyplines. Applications to Numerical and Wavelet Analysis, Academic Press-Elsevier, 2001.