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Multi-Composite General Neural Network Approximation Over Finite Dimensional Banach Spaces

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Abstract

In this talk, we consider functions defined on a finite-dimensional Banach space of dimension $N \in \mathbb{N}$ and taking values in $\mathbb{R}^N$. By exploiting suitable topological properties of this setting, we develop a multivariate multi-composite general neural network approximation scheme for such functions. Our treatment is quantitative in nature. In particular, we establish multivariate multi-composite Jackson-type inequalities in terms of the modulus of continuity of the function under approximation. The resulting convergence is obtained both pointwise and uniformly. Moreover, the method is expected to yield accelerated rates of convergence.

Keywords: Finite dimensional Banach spaces, multi-composite general neural network operators approximation, modulus of continuity, multicomposite general accelerated approximation.