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MULTIVARIATE FUZZY APPROXIMATION BY NEURAL NETWORK OPERATORS ACTIVATED BY A GENERAL SIGMOID FUNCTION

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Abstract: Here is studied in detail the multivariate fuzzy approximation to the multivariate unit by multivariate fuzzy neural network operators activated by a general sigmoid function. These operators are multivariate fuzzy analogs of earlier studied multivariate Banach space valued ones. The derived results generalize earlier Banach space valued ones into the fuzzy level. Here the high order multivariate fuzzy pointwise and uniform convergences with rates to the multivariate fuzzy unit operator are given through multivariate fuzzy Jackson type inequalities involving the multivariate fuzzy moduli of continuity of the mth order ($m \geq 0$) H-fuzzy partial derivatives, of the involved multivariate fuzzy number valued function. The treated operators are of averaged, quasi-interpolation, Kantorovich and quadrature types at the multivariate fuzzy setting.

Keywords and Phrases: General sigmoid activation function, multivariate fuzzy real analysis, multivariate fuzzy: quasi-interpolation, Kantorovich and Quadrature neural network operators, multivariate fuzzy modulus of continuity and multivariate Jackson type inequalities.

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