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# Simultaneous approximation of multivariate functions by superposition of a sigmoidal function\*

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**Abstract.** Since Cybenko [3] showed a density result of multivariate functions by neural networks, many authors ([2], [5]) investigated a complexity result of multivariate functions by neural networks. Some complexity results were suggested by Chen [1] but target functions were univariate functions. Simultaneous approximation by neural networks with a sigmoidal activation function has been investigated by some authors ([6], [7]) but target functions in [6] and [7] were also univariate functions. Hahm and Hong [8] showed constructive approximation of multivariate functions by generalized translation networks. Using algorithms in [8], we examine a constructive simultaneous approximation of multivariate function by superposition of a sigmoidal activation function in this paper.

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