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Design of Double Fuzzy Clustering-driven Context Neural Networks

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In this study, we introduce a novel category of double fuzzy clustering-driven context neural networks (DFCCNNs). The study is focused on the development of advanced design methodologies for redesigning the structure of conventional fuzzy clustering-based neural networks. The conventional fuzzy clustering-based neural networks typically focuses on dividing the input space into several local spaces (implied by clusters). In contrast, the proposed DFCCNNs takes into account two distinct local spaces called context and cluster spaces, respectively. Cluster space refers to the local space positioned in the input space whereas context space concerns a local space formed in the output space. Through partitioning the output space into several local spaces, each context space is used as the desired (target) local output to construct local models. To complete this, the proposed network includes a new context layer for reasoning about context space in the output space.

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