

Deep Dependence in Deep Learning models of Streamflow and Climate Indices

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Abstract

Hydrometeorological variables contain highly complex system for temporal revolution and it is quite challenging to illustrate the system with a temporal linear and nonlinear models. In recent years, deep learning algorithms have been developed and a number of studies has focused to model the complex hydrometeorological system with deep learning models. In the current study, we investigated the temporal structure inside deep learning models for the hydrometeorological variables such as streamflow and climate indices. The results present a quite striking such that each hidden unit of the deep learning model presents different dependence structure and when the number of hidden units meet a proper boundary, it reaches the best model performance. This indicates that the deep dependence structure of deep learning models can be used to model selection or investigating whether the constructed model setup present efficient or not.

Keywords : Deep Dependence, Hydrometeorological Variables, Climate Indices, Streamflow, Deep Learning

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