



Classification of Hydrological time series using Probabilistic Neural Network for River Flow Modeling by RBF Networks

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Artificial intelligence modeling of nonstationary rainfall-runoff has some restrictions in simulation accuracy due to the complexity and nonlinearity of training patterns. Preprocessing of trainings dataset could determine homogeneity of rainfall-runoff patterns before modeling. In this presentation, a new hybrid model of Artificial Intelligence in conjunction with clustering is introduced and applied to flow prediction. Simulation of Nazloochaei river flow in North-West Iran was the case used for development of a PNN-RBF model. PNN classify a training dataset in two groups based on Parezen theory using unsupervised classification. Subsequently each data group is used to train and test two RBF networks and the results are compared to the application of all data in a RBF network without classification. Results show that classification of rainfall-runoff patterns using PNN and prediction of runoff with RBF increase prediction precise of networks.

Keywords: Probabilistic Neural Network, Radial Base Function Neural Network, Parezen theory, River Flow Prediction