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Am evolutionary approach with feature engineering for drought prediction

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Abstract **Keywords** Drought prediction · differential evolution · calibration · Heston model · Monte Carlo simulation

1 Introduction

Mehr et and collaborators [2] presented a new hybrid model, called ENN-SA, for spatiotemporal drought prediction. In ENN-SA, an Elman neural network (ENN) is conjugated with simulated annealing (SA) optimization and support vector machine (SVM) classification algorithms for the standardized precipitation index (SPI) modeling at multiple stations.

Mehr et al [1] presented a tree-based model, namely Fuzzy Random Forest (FRF), for one month ahead Standardized Precipitation Evapotranspiration Index (SPEI) classification and prediction with a noteworthy application in ungauged catchments.

2 Material and Methods

2.1 Study area and dataset

2.2 Feature engineering

2.3 Lasso linear model

The Lasso [3] minimizes the residual sum of squares subject to the sum of the absolute value of the coefficients being less than a constant. Because of the nature of this constraint it tends to produce some coefficients that are exactly 0 and hence gives interpretable models.

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2.4 Differential evolution

3 Computational Experiments

4 Conclusion

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