Abstract

This study presents support vector machine based model for forecasting the runoff-rainfall events. A SVM based model is either implemented through Radial base or Gaussian based Kernel functions. SVM uses precipitation, temperature, sediment, rainfall, water level and discharge as input variable parameters. In this research the Sequential minimal optimization algorithm (SMO) has been implemented as an effective method for training support vector machines (SVMs) on classification tasks defined on large and sparse real time data sets. In this work, we generalized the SMO so that it can handle regression problem and by dividing datasets into test data and trained data performed future forecasting keeping four major evaluation parameters Root Mean Square Error (RMSE), Mean Absolute error (MAE), Mean Squared error (MSE) and correlation coefficient (CC). Study site for this research is Narmada basin reservoir hosahangabad catchment area and the experimental results on predicting the full natural flow of Narmada River indicates that support vector machine method performs far better and more accurate from the current forecasting practices (Artificial Neural Network).
Time Series Data Mining in Real Time Surface Runoff Forecasting through Support Vector Machine

References

- Burbridge Robert and Buxton Bernard, An Introduction to Support Vector Machines for Data Mining, UCL, Gower Street, WC1E 6BT, UK.
Index Terms

Computer Science
Artificial Intelligence

Keywords

Rainfall-runoff prediction  Support Vector Machine (SVM)  Sequential Minimum Optimization regression (SMOreg)

Artificial Neural Network (ANN)