SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Fixed and Broadcast Communications (1)

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THE HTS NETWORK LOAD PREDICTION BASED ON ZTS-SVR SUPPORT VECTOR MACHINE ALGORITHM

Abstract

The throughput of HTS is hundreds of times than traditional VSAT system and can provides broadband access for hundreds of thousands subscribers. However, the network load of the HTS is drastic fluctuations. The time series analysis algorithm is based on statistic model and obey some probability distribution which must satisfy hypothesis of stationary and independent identically distribution which is almost impossible for HTS network. Even if the non-stationary series can be converted to stationary series by serial difference, the detailed information will be lose during smoothing. This paper extends the support vector machine algorithm from discrete classification to continue time series, and presents a ZP kernel function based on ANOVA decomposition algorithm. At the same time, a SMO parallel fast algorithm is presented to decrees SVR calculating time. In the end in order to evaluation algorithm performance, a cross-validation method is presented to avoid over fitting phenomenon. The simulation results show that the algorithm precision and rate of convergence is better than ARMIA model and SVR algorithm with classic RBF kernel and without over fitting.