

Application of modal decomposition technique in network traffic prediction

ABSTRACT

Network traffic prediction is an important means of network security monitoring, and modal decomposition technology is the key to improve the accuracy of network traffic prediction. Therefore, it is imperative to study modal decomposition technology. In this paper, the advantages of Variational Mode Decomposition (VMD) are explored by summarizing and reviewing the application of modal decomposition in network traffic prediction. The findings show that the performance of VMD mainly depends on its decomposition layers k , penalty factor C and Lagrange multiplier Θ . We propose a novel algorithm structure based on square root difference and minimum Theil inequality coefficient to optimize the performance of VMD by finding the best value for these parameters. Optimized Variational Mode Decomposition (OVMD) has improved the network traffic prediction accuracy in network security management.