# An enhanced adaptive grey verhulst prediction model for network security situation

## Abstract

Situation prediction is an increasingly important focus in network security. The information of incoming security situation in the network is important and helps the network administrator to make good decisions before taking some defense remedies towards the attack exploitation. Although Grey Verhulst prediction model has demonstrated satisfactory results in other fields but some further investigations are still required to improve its performance in predicting incoming network security situation. In order to attain higher predictive accuracy of the existing Grey Verhulst prediction models, this paper tends to seek an enhancement of the adaptive Grey Verhulst security situation prediction model by forecasting the incoming residual based on the historical prediction residuals. The proposed model applied Kalman Filtering algorithm to predict the residual in the next time-frame and closer the deviation between the predicted and actual network security situation. Benchmark datasets such as DARPA 1999 and 2000 have been used to verify the accuracy of the proposed model. The results shown that the enhanced adaptive Grey Verhulst prediction model has better prediction capability in predicting incoming network security situation and also achieved a significant improvement Verhulst prediction models.