Abstract

With the growth of services in the computer networks, expert operators are required to detect the active failures quickly and automatically. In the lack of expertise, using machine learning techniques is very applicable. Automatic failures detection needs a comprehensive dataset related to major network problems. In this way, data gathering and refinement are important to select and extract the best features.

In this paper, according to the first and second layers of the TCP/IP model, some useful and intelligently features are gathered in a unified dataset. Then, some classifiers such as decision tree, Support Vector Machine (SVM), k-Nearest Neighbors (kNN), Random Forest, Naive Bayes, and Logistic Regression are employed to test the applicability of the system. In fact, this machine is a model-based, supervised learning system. The results can better reveal the merits of the proposed approach to troubleshoot the network with minimum costs.

Title

Extracting applicable features to troubleshoot computer networks for the first and second layers of the TCP/IP model using machine learning approaches

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Keywords: computer networks, machine learning, classification, data gathering, network troubleshooting.