



Internet Traffic Classification Using a Markov Model and Kullback-Leibler Divergence

Jinsoo Hwang*

Dept. of Statistics Inha University, Incheon, Korea - jshwang@inha.ac.kr

Jeankyung Kim

Dept. of Statistics Inha University, Incheon, Korea - jkkim@inha.ac.kr

Kichang Kim

School of Communication & Engineering, Inha University, Incheon, Korea - kchang@inha.ac.kr

As internet traffic rapidly increases, fast and accurate network classification is becoming essential for high quality of service control and early detection of network traffic abnormalities. Machine learning techniques based on statistical features of packet flows have recently become popular for network classification partly because of the limitations of traditional port and payload-based methods. In this paper, we propose a Markov model-based network classification with a Kullback-Leibler divergence criterion. Our study is mainly focused on hard-to-classify patterns of network applications, which current techniques have difficulty dealing with. The results of simulations show the superiority of our suggested method.

Keywords: traffic classification; Markov model; machine learning; traffic pattern; Kullback-Leibler.