# A Neural-based Scheme for Simultaneously Determining Membership and Class of String Identifiers

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## Abstract

Membership determination of text strings has been an important procedure for analyzing textual data of a tremendous amount, for which the Bloom filter has been a well-known approach because of its succinct structure. As membership with classification determination is becoming increasingly desirable, parallel Bloom filters are often implemented for coping with the additional classification requirement. The parallel Bloom filters, however, tends to produce more false-positive errors since membership checking must be performed on each of the parallel layers. We propose a scheme based on a neural network mapping, which only requires a single-layer operation to simultaneously obtain both the membership and classification information. Simulation results show that the proposed scheme committed less falsepositive errors than the parallel Bloom filters using the same computational parameters.

Keyword：String Identifier; Bloom Filter; Membership Determination; Neural Networks