

ABSTRACT

Case-Based Reasoning (CBR) is one of machine learning algorithms for problem solving and learning that caught a lot of attention over the last few years. In general, CBR is composed of four main phases: *retrieve* the most similar case or cases, *reuse* the case to solve the problem, *revise* or adapt the proposed solution, and *retain* the learned cases before returning them to the case-base for learning purpose. Unfortunately, in many cases, this retain process causes the uncontrolled case-base growth. The problem affects competence and performance of CBR systems after few runs. This paper proposes two case maintenance methods; the first method is Hybrid Technique which combines case addition strategy and the footprint deletion and footprint utility deletion strategy and the second is Competence-Preserving Case Deletion Technique which is consisted of four steps: *determine* a set of target problems, *determine* a candidate of cases, and *delete* irrelevant cases. The results obtained show that these proposed methods lead to smaller size of case-base than the existing methods currently discussed in literature.

