Sequence diagram refactoring using single and hybridized algorithms

Abdulrahman Ahmed Bobakr Baqais, Mohammad Alshayeb *

Information and Computer Science Department, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia

* alshayeb@kfupm.edu.sa

Abstract

Data mining and search-based algorithms have been applied to various problems due to their power and performance. There have been several studies on the use of these algorithms for refactoring. In this paper, we show how search based algorithms can be used for sequence diagram refactoring. We also show how a hybridized algorithm of Kmeans and Simulated Annealing (SA) algorithms can aid each other in solving sequence diagram refactoring. Results show that search based algorithms can be used successfully in refactoring sequence diagram on small and large case studies. In addition, the hybridized algorithm obtains good results using selected quality metrics. Detailed insights on the experiments on sequence diagram refactoring reveal that the limitations of SA can be addressed by hybridizing the Kmeans algorithm to the SA algorithm.