

## **A DYNAMIC ANT COLONY OPTIMIZATION FOR SOLVING THE STATIC FREQUENCY ASSIGNMENT PROBLEM**

***Khaled Alrajhi***

*Research Scholar, King Khaled Military Academy, Riyadh, Saudi Arabia*

### ***ABSTRACT***

*This study proposes dynamic ant colony optimization algorithm to solve the static frequency assignment problem. This approach solves the static problem by modeling it as a dynamic problem through dividing this static problem into smaller sub-problems, which are then solved in turn in a dynamic process. Several novel and existing techniques are used to improve the performance of this algorithm. One of these techniques is applying the concept of a well-known graph colouring algorithm, namely recursive largest first for each sub-problem. Furthermore, this study compares this algorithm using two visibility definitions. The first definition is based on the number of feasible frequencies and the second one is based on the degree. Additionally, we compare this algorithm using two trail definitions. The first one is between requests and frequencies. The second is between requests and requests. This study considers real and randomly generated benchmark datasets of the static problem and our algorithm achieved competitive results comparing with other ant colony optimization algorithms in the literature.*

***KEYWORDS:*** *Dynamic Ant Colony Optimization, Graph Colouring Algorithm, Frequency Assignment Problem*

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### ***Article History***

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