Abstract

In order to optimize the use of programs, it has become necessary to focus on issues like software reliability. In this work, the parameters of Software Reliability Growth Models (SRGMs) were estimated depending on failure data and Swarm Intelligence, namely, Grey Wolf Optimizer (GWO). Then, the (GWO) was hybrid with Real Coded Genetic Algorithm (RGA) to obtain Hybrid GWO (HGWO).

The results that obtained from (GWO) are compared to the results of five algorithms: Particle Swarm Optimization (PSO), Artificial Bee Colony (ABC), the Dichotomous Artificial Bee Colony (DABC), Classic Genetic Algorithm (CGA) and the Modified Genetic Algorithm (MGA).

The results showed that (GWO) outperformed the rest of the algorithms in parameters estimating accuracy and performance using identical datasets. Sometimes, the (DABC) showed better performance than (GWO).
Other comparisons were made between (GWO) and (HGWO) and the results show that the hybrid algorithm outperformed the original one.

References


The Use of Original and Hybrid Grey Wolf Optimizer in Estimating the Parameters of Software Reliability Growth Models


Index Terms

Computer Science Software Engineering

Keywords

Genetic algorithms, Grey Wolf optimizer, Software Reliability Growth Models.