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## Abstract

This paper proposes An Improved Artificial Bee Colony (Deb's-ABC) algorithm for solving constrained optimization problems and Nonnegative linear least squares problems. The proposed approach introduces different methods Based upon new search mechanism to balance exploration and exploitation abilities, generating initial population by using the orthogonal initialization method for achieving initial population that spread regularly over the feasible solution and to enhance the global convergence. In addition, we relax the Deb's rules by replacing the feasible solutions with the approximate feasible solutions in Deb's rules because some infeasible solutions with better objective function value and small violation may carry more important information than some feasible solutions .This algorithm is tested on several benchmark functions. Experimental results compared with a standard ABC and other algorithms show that the proposed algorithm is efficient and competitive algorithm for solving constrained optimization problems.

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## Index Terms

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## Keywords

constrained optimization Problems ,Artificial Bee Colony, Swarm Intelligent, Least Square Error