1. Record Nr. UNINA9910483711803321

Autore	Caraveo Camilo
Titolo	A New Bio-inspired Optimization Algorithm Based on the Self-defense Mechanism of Plants in Nature / / by Camilo Caraveo, Fevrier Valdez, Oscar Castillo
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-05551-5
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (VIII, 57 p.)
Collana	SpringerBriefs in Computational Intelligence, , 2625-3712
Disciplina	006.3
Soggetti	Computational intelligence Artificial intelligence Botany Mathematical optimization Computational Intelligence Artificial Intelligence Plant Science Optimization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Theory and Background -- Self-defense of the Plants -- Predator-prey mode -- Proposed Method -- Case studies -- Conclusions.
Sommario/riassunto	This book presents a new meta-heuristic algorithm, inspired by the self-defense mechanisms of plants in nature. Numerous published works have demonstrated the various self-defense mechanisms (survival strategies) plants use to protect themselves against predatory organisms, such as herbivorous insects. The proposed algorithm is based on the predator–prey mathematical model originally proposed by Lotka and Volterra, consisting of two nonlinear first-order differential equations, which allow the growth of two interacting populations (prey and predator) to be modeled. The proposed meta-heuristic is able to produce excellent results in several sets of benchmark optimization problems. Further, fuzzy logic is used for dynamic parameter

adaptation in the algorithm.