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Titolo	DNA Computing Based Genetic Algorithm [[electronic resource]] : Applications in Industrial Process Modeling and Control / / by Jili Tao, Ridong Zhang, Yong Zhu
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2020
ISBN	981-15-5403-X
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (IX, 274 p. 187 illus., 108 illus. in color.)
Disciplina	519.7
Soggetti	Computer mathematics Control engineering Artificial intelligence Computational Science and Engineering Control and Systems Theory Artificial Intelligence
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- DNA computing based RNA-GA -- DNA double-helix based hybrid genetic algorithm -- DNA computing based multi-objective genetic algorithm -- Parameter identification and optimization for chemical process -- RBF neural network for nonlinear SISO system -- T-S Fuzzy neural network for nonlinear SISO system -- PCA & GA based ARX plus RBF Modeling for Nonlinear DPS -- GA based predictive control design -- MOGA based PID controller design -- Concluding Remarks.
Sommario/riassunto	This book focuses on the implementation, evaluation and application of DNA/RNA-based genetic algorithms in connection with neural network modeling, fuzzy control, the Q-learning algorithm and CNN deep learning classifier. It presents several DNA/RNA-based genetic algorithms and their modifications, which are tested using benchmarks, as well as detailed information on the implementation steps and program code. In addition to single-objective optimization, here genetic algorithms are also used to solve multi-objective optimization for neural network modeling, fuzzy control, model predictive control

and PID control. In closing, new topics such as Q-learning and CNN are introduced. The book offers a valuable reference guide for researchers and designers in system modeling and control, and for senior undergraduate and graduate students at colleges and universities. .