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IIM> Vol.4 No.6, November 2012

OPEN ACCESS

A Quantum Behaved Gravitational Search Algorithm

PDF (Size:470KB) PP. 390-395   DOI: 10.4236/iim.2012.46043

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ABSTRACT

Gravitational search algorithm (GSA) is a recent introduced global convergence guaranteed algorithm. In this paper, a quantum-behaved gravitational search algorithm, namely called as QGSA, is proposed. In the proposed QGSA each individual mass moves in a Delta potential well in feasible search space with a center which is weighted average of all kbests. The QGSA is tested on several benchmark functions and compared with the GSA. It is shown that the quantum-behaved gravitational search algorithm has faster convergence speed with good precision, and thus generating a better performance.

KEYWORDS

GSA; Quantum Mechanics; kbest; QGSA

Cite this paper

References

[1]   E. Rashedi, H. Nezamabadi-Pour and S. Saryazdi, " GSA: A Gravitational Search Algorithm," Information Science, Vol. 179, No. 13, 2009, pp. 2232-2248. doi:10.1016/j.ins.2009.03.004

[2]   K. S. Tang, K. F. Man, S. Kwong and Q. He, " Genetic Algorithms and Their Applications," IEEE Signal Processing Magazine, Vol. 13, No. 6, 1996, pp. 22-37 doi:10.1109/79.543973

[3]   F. V. D. Bergh and A. P. Engelbrecht, " A Study of Particle Swarm Optimization Particle Trajectories," Information Sciences, Vol. 176, No. 8, 2006, pp. 937-971. doi:10.1016/j.ins.2005.02.003

[4]   X. F. Pang, " Quantum Mechanics in Nonlinear Systems," World Scientific Publishing Company, River Edge, 2005. doi:10.1142/9789812567789

[5]   W. Schweizer, " Numerical Quantum Dynamics," Hingham, 2001.