

完全且完整的Tsallis隨機變數的產生器及其在連續變數函數最佳化的應用及探討

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摘要

Tsallis之分佈由C. Tsallis 於1996年提出來解決模擬退火之問題，此演算法被證明為比起一般的模擬退火法能夠更快達到全域最佳解，但是該函數非常複雜，無法用一般產生隨機變數的方法來獲得。Tsallis分佈內有兩個參數，T和qv且 $1 < qv < qv < qv$

關鍵詞：Tsallis之分佈、模擬退火法、隨機變數產生器、Ratio of uniform、convex enveloping polygon

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參考文獻

1. 陳信寶，“對Tsallis隨機變數的隨機產生器之探討及應用，”大葉大學工業工程研究所碩士論文，2003。
2. Aluffi-pentini, F., Parisi, V. and Zirilli, F., “Global Optimization and Stochastic Differential Equations,” Journal of optimization theory and application, 47(1), pp.1-17, 1985.
3. Averill, L. M. and Kelton, D. W., Simulation modeling and analysis, McGraw-Hill, Boston, 2000.
4. Bratley, P., Fox, B. L., Schrage, L. E., A guide to simulation, Springer-Verlag, New York, 1987.
5. Deng, J., Chen, H., Chang, C. and Yang, Z., “A Superior Random Number Generator for Visiting Distribution in GSA,” International journal of computer mathematics, Accepted, 2003.
6. Devroye, L., Non-Uniform Random Variate Generation, Spring-Verlag, New Yourk, 1986.
7. Hormann, W., “A Rejection Technique for sampling from T-concave Distributions,” ACM Transactions on Mathematical Software, 21(2), pp. 182-193, 1995.
8. Kinderman, A. J. and Monahan, J. F., “Computer Generation of Random Variables Using the Ratio of Uniform Deviates,” ACM Transactions on Mathematical Software, 3(3), pp.257-260, 1977.
9. Leydold, J., “Automatic Sampling with Ratio of Uniforms Method,” ACM Transactions on Mathematical Software, 26(1), pp. 78-98, 2000.
10. Mantegna, R. N., “Fast accurate algorithm for numerical simulation of Levy stable stochastic process,” Physical Review E, 49, pp. 4677-4683, 1994.
11. Mathews, J. H., Fink, K. D., Numerical Methods using Matlab, third edition, Prentice-Hall, Sydney, 1999.
12. Penna, T. J. P., “Traveling salesman problem and Tsallis statistics,” Physical Review E, 51, pp. R1-R3, 1995.
13. Tsallis, C., “Possible generalization of Boltzmann-Gibbs statistics,” Journal of Statistical Physics, 52(1/2), pp. 479-487, 1988.
14. Tasllis, C. and Stariolo, D.A., “Generalizes simulated annealing,” Physical A, 233, pp. 395-406, 1996.
15. Vardeman, S. B., Statistics for engineering problem solving, PWS Publishing, Boston, 1993.
16. Webster, R., Convexity, Oxford University Press, New York, 1994.