# Using Tsallis Variate to Mutation Operation on the Evolution Strategy


## 賴宜和、鄧志堅

E-mail: 9800808@mail.dyu.edu.tw



**ABSTRACT**

Evolutionary computation uses iterative evolution method to search the optimum solution by computer simulation, in which evolutionary strategy (ES) and evolutionary programming (EP) are two commonly used techniques to tackle the parameters optimization. EP has been extensively applied in the realms of engineering, management and service industry. However, due to the complexity of various problems, it does not always guarantee the global optimization, and could fail and trap in the local optimum. Traditionally, EP uses Gaussian mutator which is beneficial in the small perturbation but when dealing with the multi-mode function problem, it will probably trap in the local optimum and hardly jump out of it. Whereas when using the Cauchy mutator in the EP, it can easily jump out of the local trap but has the problem of convergence to the global optimum. Therefore, we propose the Tsallis distribution as the mutator for the EP and use the test functions in Iwamatsu to compare the performance among the three mutators and find out our method is better than the one of Iwamatsu.



Keywords : Classical Evolutionary Programming、Fast Evolutionary Programming、Evolutionary Strategy、Evolutionary Programming、Evolutionary Computation


**Table of Contents**



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