

Artificial Bee Colony Algorithm with High Robustness for Time-Varying Solutions

Ken Kamiyotsumoto
Dept. of Electrical
and Electronic Engineering,
Tokushima University,
2-1 Minami-Josanjima,
Tokushima, 770-8506, Japan

E-mail: kamiyotsumoto@ee.tokushima-u.ac.jp

Thomas Ott
Zurich University of Applied Sciences
Einsiedlerstrasse 31a,
8820 Waedenswil, Switzerland
E-mail: thomas.ott@zhaw.ch

Yoko Uwate and Yoshifumi Nishio
Dept. of Electrical
and Electronic Engineering
Tokushima University,
2-1 Minami-Josanjima,
Tokushima, 770-8506, Japan
E-mail: {uwate, nishio}@ee.tokushima-u.ac.jp

SUMMARY

Optimization is to search for an optimal solution under condition. The benefit of optimization is high efficiency for the solution. Combinatorial optimization problem is often solved by metaheuristic optimization algorithms. However, there is a risk to be trapped at local optima such algorithms. To overcome this issue, metaheuristic optimization algorithms are improved in research. These algorithms can be applied to different optimization problems with relatively few modifications [1]. Metaheuristic optimization algorithms have Evolutionary Algorithm (EA), Swarm Intelligence (SI) algorithm, local search, etc. SI is one of the artificial intelligence techniques. SI aims to design algorithms with inspiration in the collective and intelligent behavior of insects and other animals. The good points of this technique are smaller control system and multi control by simple systems. SI algorithms have various kinds.

In this study, we propose SI algorithm for time-varying solutions. The most of algorithms exclude time-varying solution [2]. However, when we implement SI algorithm in the system, we need to apply the both solutions (time-varying and not time-varying) for high robustness of the system. It is important to search optimal solution under various conditions. Thus, we improve Artificial Bee Colony (ABC) algorithm applying for time-varying solutions. The employed bee, one of the three groups of the ABC algorithm, is improved by referring to the predicted values and the equation of Particle Swarm Optimization.

REFERENCES

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