Introduction

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Biographical notes: Shifei Ding holds post PhD in Computer Science from Shandong University of Science and Technology in 2004, and joined China University of Mining and Technology as a Professor and PhD Supervisor, and Key Laboratory of Intelligent Information Processing, Institute of Computing Technology, and Chinese Academy of Sciences as a Visiting Research Fellow. His thesis in 2004, titled 'Digital pattern recognition and its applications based on information theory' won The National Excellent Doctoral Dissertation nomination. His research interests include intelligent information processing, pattern recognition, machine learning, data mining, and granular computing et al. He published three books and more than 150 research papers in journals and international conferences.

We are in a collaborative innovation era, traditional optimisation design method or simple artificial intelligence optimisation method has been difficult to meet the requirements of the modern society. Thus, it is necessary to study novel and faster modern optimisation methods with innovative features.

Optimisation problem has been internationally recognised as one of the hot and difficult issues. Inspired by natural phenomena, social phenomena and biological intelligence, computational intelligence provides a simple, versatile and robust method, which can solve most of optimisation problems, efficiently. However, faced with the growing complex optimisation problems in today's society, traditional intelligent optimisation methods still have many limitations. Introducing hybrid mechanism and collaborative mechanism into the traditional intelligent computing can efficiently overcome the defects of other intelligent computing methods, such as prematurity phenomenon and low optimising accuracy. At present, exploring the intrinsic links and internal mechanisms of hybrid-collaborative intelligent optimisation and approaching the hybrid intelligent optimising algorithm based on co-evolution have become a hot topic in the field of artificial intelligence.

So, what is computational intelligence? Computational intelligence is a common name of a class of algorithms, whose design is inspired by nature wisdom and human wisdom. With the progress of technology, the problems encountered in scientific research and engineering practice are becoming more and more complex; exploiting traditional computing methods to solve these problems will face many difficulties, e.g.,

high computational complexity, long computing time, etc. Especially for some non-deterministic polynomial (NP) hard problems, traditional algorithms cannot find the exact solution within tolerable time. Thereby, in order to strike a balance between computational time and solution accuracy, computer scientists proposed a lot of computational intelligence algorithms with heuristic features. These algorithms mimic evolution of the biosphere, or mimic physical structure and bodily functions of creatures, or mimic group behaviour of animals, or mimic the characteristics of human thought, language and memory processing, or mimic physical phenomena of nature, hoping to achieve optimal solution of the problems by simulating the intelligence of nature and humans, and find an acceptable solution within an acceptable period of time. These algorithms composed the computational intelligent optimisation algorithm, together. Currently, computational intelligence algorithms have got widespread attention, and have become an important research direction of artificial intelligence and computer science.

Also what is hybrid intelligence? Biological intelligence, human intelligence and machine intelligence all have their own strengths, and meanwhile high complementary. We can make use of brain-computer interface and internet technology, to gradually extend the insight to the interconnection of biological brain, human brain and machine brain; think about how to build a new intelligence system combining the advantages of these three kinds of brain, and achieve higher performance of intelligence behaviour. With the development and convergence of neuroscience, bionics and artificial intelligence, we have reached a new phase of the exploring of intelligence science. Scholars are trying hard to achieve the multi-level combination of machine intelligence, biological intelligence and human intelligence.

What is collaborative intelligence? Collaboration mainly means, according to the overall goal and needs of parties, appropriate setting the post and distributing corresponding responsibilities, then every party obtaining competent post and fulfilling corresponding responsibilities by competing; meanwhile, the party obtained post should have the ability to collaboratively use objective and resource when accomplishing group activities, as much as possible to reduce conflict and maintain the consistency of the system behaviours. Collaboration can not only improve the integrity and flexibility of the system, and enhance the problem-solve ability of the system, but also promote the system to work together in a consistent and harmonious way. The researches based on collaborative mechanism and intelligence algorithm, have crucial theoretical significance and practical application value. The assignments distribution is the core and key of combinatorial optimisation problem within a distributed environment, and the computational complexity of these problems is NP hard. These problems not only belong to the field of computer science, also belong to the field of artificial intelligence.

In conclusion, introducing hybrid mechanism and collaborative mechanism into computational intelligence to establish hybrid-collaborative intelligence model is an efficient way to overcome the shortage of traditional intelligence algorithm. Currently, many scholars are working on the research of hybrid-collaborative intelligence algorithm, which has become a hot research topic in the field of artificial intelligence.

In our journal, we are committed to provide a platform for researchers to discuss collaborative intelligence. Collaborative intelligence is an interdisciplinary subject involving topics from cognitive science, neuroscience, intelligence science and information science, among others. *IJCI* proposes and fosters discussion on the development and evolution of artificial intelligence and machine intelligence. This perspective acknowledges the nature of the research in collaborative intelligence. The

objectives of *IJCI* are to establish an effective channel of communication between researchers, scientists, engineers and persons concerned with the progress of collaborative intelligence and to promote and coordinate developments in the field. The primary aim of the journal is to publish high-quality papers on new developments and progress with novel techniques and approaches in the theory and applications of collaborative intelligence.