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Editor's Remarks

Knowledge Transfer and Multitasking

Leveraging knowledge has been a key topic in the research of computational intelligence, where the knowledge can be acquired by humans or machines from the learning process or search experience. Transferring the knowledge learnt, as humans usually do, possesses a great potential for dealing with new tasks in learning and optimization. In particular, evolutionary multitasking renders an intriguing way to optimize multiple tasks simultaneously through evolutionary mechanisms and knowledge transfer. Although humans also multitask—at least I thought I could—our performance in multitasking may neither come up to our expectations nor be comparable with machines. Researchers in neuroscience and psychology have found that the human brain is not built to perform tasks concurrently. Having multiple task goals actually causes interference between our brain networks. Switching back and forth between tasks, i.e., context switching, increases the demand for more processing in our brains and eventually leads to performance deterioration. Interestingly, the research also indicates that our multitasking ability may be affected by evolution and the training of media multitasking in modern life.

This issue features three articles in "Knowledge Transfer in Evolutionary Optimization." The first article introduces a generalized resource allocation framework for evolutionary multitask optimization, especially under restrictive computational resources. To address the issue of negative knowledge transfer among low-correlation tasks, the second article considers inter-task gene similarity and mirror transform and integrates them into the multifactorial evolutionary algorithm. The third article presents advanced designs for memetic automation; notably, meme selection is devised to improve knowledge transfer across the population.

In the *Columns*, the first article proposes a new data hiding scheme that enables transmitting data to multiple receivers through a single neural network. The second article applies evolutionary algorithms to design nanoparticle based drug delivery systems for cancer treatment. In the *Society Briefs*, we congratulate the 2021 CIS Award recipients on their remarkable accomplishments.

Finally, I would like to thank our CIS President, Bernadette Bouchon-Meunier, for her leadership these past two years. The CIS has been thriving even under the hardships the pandemic has brought. In particular, during her tenure as the President, she strove to promote diversity in all activities within the society, and the CIS saw a rise especially in the number of women in our committees. The CIS chapters are continuously growing under her guidance and support. Once again, I heartily thank the President and wish her the very best in her future endeavors.

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