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Parameter-setting-free harmony search algorithm. (English) Zbl 1206.90220

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Summary: Various phenomenon-mimicking algorithms, such as genetic algorithms, simulated annealing, tabu search, ant colony optimization, and particle swarm optimization, have their own algorithm parameters. These parameters need to be skillfully assigned in order to obtain good results. It is burdensome, especially to novice users, to assign these parameters. The same is true for the harmony search algorithm which was inspired by music performance. Thus, this study proposes a novel technique to eliminate tedious and experience-requiring parameter assigning efforts. The new parameter-setting-free (PSF) technique which this study suggests contains one additional matrix which contains an operation type (random selection, memory consideration, or pitch adjustment) for every variable in harmony memory. Three examples illustrate that the PSF technique can find good solutions robustly.

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