

Studies in Computational Intelligence, Volume 270

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Recent Advances in Harmony Search Algorithm

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Preface

Nowadays, music-inspired phenomenon-mimicking harmony search algorithm is fast growing with many applications. One of key success factors of the algorithm is the employment of a novel stochastic derivative which can be used even for discrete variables. Instead of traditional calculus-based gradient, the algorithm utilizes musician's experience as a derivative in searching for an optimal solution. This can be a new paradigm and main reason in the successes of various applications.

The goal of this book is to introduce major advances of the harmony search algorithm in recent years. The book contains 14 chapters with the following subjects: State-of-the-art in the harmony search algorithm structure by Geem; robotics (robot terrain and manipulator trajectory) by Xu, Gao, Wang, Xue, Tangpattanakul, Meesomboon, and Artrit; visual tracking by Fourie, Mills, and Green; web text data mining by Forsati and Mahdavi; power flow planning by Panigrahi, Pandi, Das, and Abraham; fuzzy control system by Coelho and Bernert; hybridization (with Taguchi method or SQP method) by Yildiz, Öztürk, and Fesanghary; groundwater management by Ayvaz; irrigation by Cisty; logistics by Bo, Huang, Ip, and Wang; timetabling by Al-Betar, Khader, and Liao; and bioinformatics (RNA structure prediction) by Mohsen, Khader, and Ramachandram.

This book collects the above-mentioned theory and applications, which are dispersed in various technical publications, so that readers can have a good grasp of current status of the harmony search algorithm and foster new breakthroughs in their fields using the algorithm.

Finally, I, as an editor and musician, would like to share the joy of the publication with all the people who like both music and computational optimization.

Zong Woo Geem
Editor

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