

Accepted Manuscript

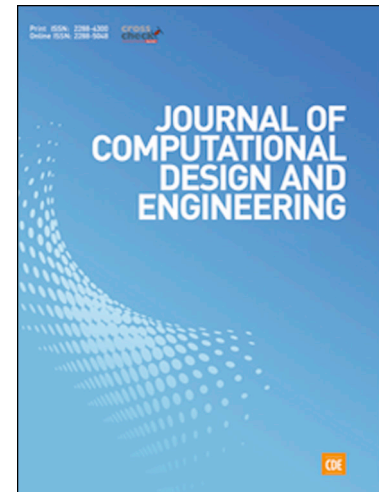
Multi-objective colliding bodies optimization algorithm for design of trusses

A. Kaveh, V.R. Mahdavi

PII: S2288-4300(17)30182-3
DOI: <https://doi.org/10.1016/j.jcde.2018.04.001>
Reference: JCDE 143

To appear in: *Journal of Computational Design and Engineering*

Received Date: 6 September 2017
Revised Date: 29 March 2018
Accepted Date: 8 April 2018



Please cite this article as: A. Kaveh, V.R. Mahdavi, Multi-objective colliding bodies optimization algorithm for design of trusses, *Journal of Computational Design and Engineering* (2018), doi: <https://doi.org/10.1016/j.jcde.2018.04.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Multi-objective colliding bodies optimization algorithm for design of trusses

A. Kaveh*, V.R. Mahdavi

Abstract. This article presents a new population-based optimization algorithm to solve the multi-objective optimization problems of truss structures. This method is based on the recently developed single-solution algorithm proposed by the present authors, so called colliding bodies optimization (CBO), with each agent solution being considered as an object or body with mass. In the proposed multi-objective colliding bodies optimization (MOCBO) algorithm, the collision theory strategy as the search process is utilized and the Maximin fitness procedure is incorporated to the CBO for sorting the agents. A series of well-known test functions with different characteristics and number of objective functions are studied. In order to measure the accuracy and efficiency of the proposed algorithm, its results are compared to those of the previous methods available in the literature, such as SPEA2, NSGA-II and MOPSO algorithms. Thereafter, two truss structural examples considering bi-objective functions are optimized. The performance of the proposed algorithm is more accurate and requires a lower computational cost than the other considered algorithms. In addition, the present methodology uses simple formulation and does not require internal parameter tuning.

Keywords: Design optimization. multiobjective algorithm. truss structural optimization. colliding bodies optimization algorithm. maximin method.

A.Kaveh* (□),

Professor of Structural Engineering

Centre of Excellence for Fundamental Studies in Structural Engineering, Iran University of Science and Technology, Tehran, P.O. Box 16846-13114, Iran E-mail: alikhavah@iust.ac.ir (A. Kaveh)

V.R. Mahdavi,

Postdoctoral Researcher

Department of Civil Engineering, Iran University of Science and Technology, Narmak, Tehran, P.O. Box 16846-13114, Iran

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات