Chuang-Chieh Lin <josephcclin@gms.tku.edu.tw>

International Journal of Computer Mathematics: Computer Systems Theory - Invitation to Review Manuscript ID TCOM-2022-0018

1 message

International Journal of Computer Mathematics: Computer Systems Theory
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Reply-To: TCOM-peerreview@journals.tandf.co.uk
To: josephcclin@gms.tku.edu.tw

Thu, Jul 14, 2022 at
4:34 PM

14-Jul-2022

Re: Manuscript ID: TCOM-2022-0018 entitled "A solving approach for packing irregular 3D objects based on nonlinear programming" with Yaskov, Georgiy; Chugay, Andrey; Stoian, Yurij; Zhuravka, Andrii as contact author

Dear Dr Lin,

The above mentioned manuscript has been submitted to the International Journal of Computer Mathematics: Computer Systems Theory. You have been recommended as a suitable referee and we hope that you will be able to provide us with a review of the paper. The abstract of the paper appears at the end of this email, along with the names of the authors. If possible, we would like the review to be completed by 12-Sep-2022, but if needed we can give you an extension.

Please could you let me know whether you are willing to review this manuscript? To do this please click the appropriate link below to automatically register your reply with our online manuscript submission and review system:

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If you are unable to review at this time, the Editors would be very grateful if you could recommend other experts in your field who may be prepared to assist us.

Should you accept our invitation to review this manuscript, you will be notified via e-mail about how to access ScholarOne Manuscripts, our on-line manuscript submission and review system. You will then have access to the manuscript and reviewer instructions in your Referee Centre.

I look forward to hearing from you.

Yours sincerely,

Dr Ling-Ju Hung
International Journal of Computer Mathematics: Computer Systems Theory.
TCOM-peerreview@journals.tandf.co.uk

MANUSCRIPT DETAILS

TITLE: A solving approach for packing irregular 3D objects based on nonlinear programming

AUTHORS: Yaskov, Georgiy; Chugay, Andrey; Stoian, Yurij; Zhuravka, Andrii

ABSTRACT: The paper presents a nonlinear optimization approach for tackling 3D irregular packing problems with arbitrary moved and rotated objects. As irregular 3D objects we consider unions of such convex objects: cuboids, spheres, cones, cylinders, truncated cones, spherical segments, spherocylinders, spherocones and discuses. Phi-function and quasi phi-function are used to describe interactions between the objects. A mathematical formulation of the packing problem is presented and its characteristics are investigated. Based on the characteristics a local optimization algorithm for solving the problem is offered. For quick construction of starting points, a strategy that uses

a cluster packing of objects is proposed, cuboids and spheres being used as clusters. A special optimization approach is used for construction of clusters. Local optimization is performed in two stages. At the first stage the rotation angles of objects are fixed. At the second stage the feasible region is considered as a union of subregions. A step-by-step transition from one subregion to another is realized. The computational study demonstrates that the solving approach is effective for the 3D irregular optimization packing problems.12-Sep-2022