

# Online Supplement to “Voxel-based solution approaches to the 3D irregular packing problem”

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## Problem instances:

The problem instances solved in this article can be found on the website of the EURO Working Group on Cutting and Packing, ESICUP: <https://www.euro-online.org/websites/esicup/>, which hosts several benchmark instances for a variety of cutting and packing problems.

The instances included is summarised on the following table:

Instance	Type	Source	Filenames
Stoyan2	Voxelised	[Stoyan2005]	st05_e2.txt
Stoyan3	Voxelised	[Stoyan2005]	St_05_Example3_normal.txt
Merged_i	Voxelised	[Egeblad2009]	Merged*_normal.txt
Experiment_1	Voxelised	[Liu2015]	liu.txt
Experiment_i	Voxelised	[Stoyan2004]	st04_Example*_normal.txt
Blobs_i	Generated	-	blobs/*.txt
Shapes_3D	Adapted	[Oliveira2000]	shapesn0_normal.txt
Engine	Realistic /Voxelised	[Harrell2015]	engine.txt
Chess	Realistic /Voxelised	[Edwards2014]	chess.txt

## Algorithm code:

The code implementing the algorithms proposed on the article can be accessed on the following GitHub repository: [https://github.com/c-lamas/voxel\\_packing](https://github.com/c-lamas/voxel_packing)

## References:

[Stoyan2005] Stoyan YG, Gil NI, Scheithauer G, Pankratov A, Magdalina I (2005) Packing of convex polytopes into a parallelepiped. *Optimization: A Journal of Mathematical Programming and Operations Research* 54(2):215{235, ISSN 0233-1934, URL <http://dx.doi.org/10.1080/02331930500050681>

[Stoyan2004] Stoyan YG, Gil N, Pankratov A, Scheithauer G (2004) Packing non-convex polytopes into a parallelepiped. Technical Report

[Egeblad2009] Egeblad J, Nielsen BK, Brazil M (2009) Translational packing of arbitrary polytopes. *Computational Geometry* 42(4):269{288, ISSN 09257721, URL <http://dx.doi.org/10.1016/j.comgeo.2008.06.003>

[Liu2015] Liu X, Liu JM, Cao AX, Yao ZL (2015) HAPE3D - a new constructive algorithm for the 3D irregular packing problem. *Frontiers of Information Technology & Electronic Engineering* 16(5):380{390, ISSN 2095-9184, URL <http://dx.doi.org/10.1631/FITEE.1400421>

[Oliveira2000] Oliveira JF, Gomes AM, Ferreira JS (2000) TOPOS - A new constructive algorithm for nesting problems. *OR Spektrum* 22(2):263, ISSN 01716468, URL <http://dx.doi.org/10.1007/s002910050105>

[Harrell2015] Harrell E (2015) Toyota 4 Cylinder Engine 22RE, Complete working model. URL <http://www.thingiverse.com/thing:644933>

[Edwards2014] Edwards T (2014) Classic Chess Set from glChess. URL <https://www.thingiverse.com/thing:322616>