

Resource Summary Report

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Autopack

RRID:SCR_006830

Type: Tool

Proper Citation

Autopack (RRID:SCR_006830)

Resource Information

URL: <http://www.autopack.org/>

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Description: An open-source general packing algorithm that packs 3D objects onto surfaces, into volumes, and around volumes. It provides a general architecture to allow various packing algorithms to interoperate efficiently in the same model. autoPack can incorporate any packing solution into its modular python program architecture, but is currently optimized to provide a novel solution to the loose packing problem which places objects of discrete size into place (compared to advancing front, popcorn, or other fast tight-packing solutions that allow objects to scale to arbitrary masses.) Most popular 3D software programs now contain robust physics engines based on Bullet that can separate small collections of overlapping objects or allow volumes to be filled by pouring shapes from generators, but these approaches fails for large complex systems and result in either overlapping geometry, crashed software, or non-random gradients. Most packing algorithms are designed to position objects as efficiently as possible, but autoPack allows the user to select from random loose packing to highly organized packing methods???? ??even to choose both methods at the same time. autoPack positions 3D geometries into, onto, and around volumes with minimal to zero overlap. autoPack mixes several packing approaches and procedural growth algorithms. autoPack can thus place objects with forces and constraints to allow a high degree of control ranging from completely random distributions to highly ordered structures. * zero to minimal overlaps depending on the method used * accuracy vs speed parameters selected by the user * zero edge effects * complete control, from fully random to fully ordered distributions * agent-based interaction, weighting, and collision control

Abbreviations: autoPack

Resource Type: software application, software resource, data processing software

Keywords: 3d visualization software, modeling software, 3d packing software, packing, 3d object, surface, volume, algorithm

Funding: QB3 at UCSF Fellowship ;
NSF 07576;
NCRR P41 RR08605

Availability: GNU Lesser General Public License

Resource Name: Autopack

Resource ID: SCR_006830

Alternate IDs: nlx_151791

Alternate URLs: <https://sites.google.com/site/autofill21/>, <http://code.google.com/p/autofill/>

Record Creation Time: 20220129T080238+0000

Record Last Update: 20260727T040422+0000

Ratings and Alerts

No rating or validation information has been found for Autopack.

No alerts have been found for Autopack.

Data and Source Information

Source: [SciCrunch Registry](#)

Usage and Citation Metrics

We found 3 mentions in open access literature.

Listed below are recent publications. The full list is available at [SPARC SAWG](#) .

Keto L, et al. (2023) CellRemorph: A Toolkit for Transforming, Selecting, and Slicing 3D Cell Structures on the Road to Morphologically Detailed Astrocyte Simulations. Neuroinformatics, 21(3), 483.

Kadir SR, et al. (2021) Nanoscape, a data-driven 3D real-time interactive virtual cell environment. eLife, 10.

Johnson GT, et al. (2015) cellPACK: a virtual mesoscope to model and visualize structural systems biology. Nature methods, 12(1), 85.