Resource Summary Report

Generated by dkNET on May 21, 2025

Vaa3D

RRID:SCR_002609
Type: Tool

Proper Citation

Vaa3D (RRID:SCR_002609)

Resource Information

URL: http://www.vaa3d.org

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Description: A handy, fast, and versatile 3D/4D/5D Image Visualization & Analysis System for Bioimages & Surface Objects. Vaa3D is a cross-platform (Mac, Linux, and Windows) tool for visualizing large-scale (gigabytes, and 64-bit data) 3D/4D/5D image stacks and various surface data. It is also a container of powerful modules for 3D image analysis (cell segmentation, neuron tracing, brain registration, annotation, quantitative measurement and statistics, etc) and data management. Vaa3D is very easy to be extended via a powerful plugin interface. For example, many ITK tools are being converted to Vaa3D Plugins. Vaa3D-Neuron is built upon Vaa3D to make 3D neuron reconstruction much easier. In a recent Nature Biotechnology paper (2010, 28(4), pp.348-353) about Vaa3D and Vaa3D-Neuron, an order of magnitude of performance improvement (both reconstruction accuracy and speed) was achieved compared to other tools.

Abbreviations: Vaa3D, Vaa3D-Neuron

Synonyms: V3D, Vaa3D: A Swiss army knife for bioimage visualization & analysis, V3D-Neuron, Vaa3D: A Swiss army knife for bioimage visualization and analysis, 3D Visualization-Assisted Analysis, Vaa3D and Vaa3D-Neuron

Resource Type: image analysis software, data visualization software, software resource, data processing software, software toolkit, software application, data management software

Defining Citation: PMID:20231818

Keywords: reusable library, atlas application, c, c++, cygwin, fiber tracking, gnome, image display, kde, linux, macos, microsoft, magnetic resonance, neuronal characterization,

development environment, position, posix/unix-like, quantification, registration, rendering, resampling, segmentation, shape analysis, spatial transformation, surface analysis, tractography, visualization, volumetric analysis, warping, win32 (ms windows), windows, windows 95/98/2000, windows nt/2000, windows vista, windows xp, 3d neuron reconstruction, 3d, neuron, reconstruction, microscopy

Funding: Howard Hughes Medical Institute

Availability: v3D License 2010-April, Http://www.nitrc.org/include/glossary.php#581

Resource Name: Vaa3D

Resource ID: SCR_002609

Alternate IDs: nlx_156012

Alternate URLs: http://www.nitrc.org/projects/v3d

Record Creation Time: 20220129T080214+0000

Record Last Update: 20250521T060852+0000

Ratings and Alerts

No rating or validation information has been found for Vaa3D.

No alerts have been found for Vaa3D.

Data and Source Information

Source: SciCrunch Registry

Usage and Citation Metrics

We found 140 mentions in open access literature.

Listed below are recent publications. The full list is available at dkNET.

Izquierdo P, et al. (2024) Amyloid plaques and normal ageing have differential effects on microglial Ca2+ activity in the mouse brain. Pflugers Archiv : European journal of physiology, 476(2), 257.

Hou YN, et al. (2024) Analyzing the factors affecting virus invasion by quantitative single-particle analysis. Virulence, 15(1), 2367671.

Brunner J, et al. (2024) Axons compensate for biophysical constraints of variable size to uniformize their action potentials. PLoS biology, 22(12), e3002929.

Matthews EA, et al. (2024) RNA-programmable cell type monitoring and manipulation in the human cortex with CellREADR. bioRxiv : the preprint server for biology.

Schmidt AR, et al. (2024) Transcriptional control of visual neural circuit development by GS homeobox 1. PLoS genetics, 20(4), e1011139.

Guliy OI, et al. (2024) Sensor system for analysis of biofilm sensitivity to ampicillin. Applied microbiology and biotechnology, 108(1), 172.

Zhang L, et al. (2024) Collaborative augmented reconstruction of 3D neuron morphology in mouse and human brains. Nature methods, 21(10), 1936.

Checcucci C, et al. (2024) Deep learning-based localization algorithms on fluorescence human brain 3D reconstruction: a comparative study using stereology as a reference. Scientific reports, 14(1), 14629.

Vitacolonna M, et al. (2024) A spheroid whole mount drug testing pipeline with machine-learning based image analysis identifies cell-type specific differences in drug efficacy on a single-cell level. BMC cancer, 24(1), 1542.

Morrison LM, et al. (2024) Increased intrinsic membrane excitability is associated with olivary hypertrophy in spinocerebellar ataxia type 1. Human molecular genetics, 33(24), 2159.

Liu Y, et al. (2024) Neuronal diversity and stereotypy at multiple scales through whole brain morphometry. Nature communications, 15(1), 10269.

Masoli S, et al. (2024) Human Purkinje cells outperform mouse Purkinje cells in dendritic complexity and computational capacity. Communications biology, 7(1), 5.

Xie P, et al. (2024) 4D live tracing reveals distinct movement trajectories of meiotic chromosomes. Life medicine, 3(6), lnae038.

Tecuatl C, et al. (2024) Accelerating the continuous community sharing of digital neuromorphology data. FASEB bioAdvances, 6(7), 207.

Sizemore TR, et al. (2023) Heterogeneous receptor expression underlies non-uniform peptidergic modulation of olfaction in Drosophila. Nature communications, 14(1), 5280.

Wang Q, et al. (2023) Regional and cell-type-specific afferent and efferent projections of the mouse claustrum. Cell reports, 42(2), 112118.

Sorensen SA, et al. (2023) Connecting single-cell transcriptomes to projectomes in mouse visual cortex. bioRxiv : the preprint server for biology.

Farzad S, et al. (2023) Impact of Retinal Degeneration on Response of ON and OFF Cone

Bipolar Cells to Electrical Stimulation. IEEE transactions on neural systems and rehabilitation engineering : a publication of the IEEE Engineering in Medicine and Biology Society, 31, 2424.

Morrison LM, et al. (2023) Increased intrinsic membrane excitability is associated with hypertrophic olivary degeneration in spinocerebellar ataxia type 1. bioRxiv : the preprint server for biology.

Kim MH, et al. (2023) Target cell-specific synaptic dynamics of excitatory to inhibitory neuron connections in supragranular layers of human neocortex. eLife, 12.