Resource Summary Report

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BluePyOpt

RRID:SCR_014753
Type: Tool

Proper Citation

BluePyOpt (RRID:SCR_014753)

Resource Information

URL: https://github.com/BlueBrain/BluePyOpt

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Description: An extensible framework for data-driven model parameter optimization that wraps and standardizes several existing open-source tools. BluePyOpt abstracts the optimization and evaluation tasks into various reusable and flexible discrete elements according to established best-practices. It also provides methods for setting up both small- and large-scale optimizations on a variety of platforms.

Synonyms: Blue Brain Python Optimization Library, Blue Brain Python Optimisation Library (BluePyOpt), Blue Brain Python Optimisation Library

Resource Type: software application, software resource, simulation software

Keywords: python, optimization, framework, library, brain, model parameter, neuroscience

Funding: European Union FP7 604102

Availability: Acknowledgement requested

Resource Name: BluePyOpt

Resource ID: SCR_014753

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

Record Creation Time: 20220129T080322+0000

Record Last Update: 20250522T060917+0000

Ratings and Alerts

No rating or validation information has been found for BluePyOpt.

No alerts have been found for BluePyOpt.

Data and Source Information

Source: SciCrunch Registry

Usage and Citation Metrics

We found 23 mentions in open access literature.

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

Clatot J, et al. (2024) A structurally precise mechanism links an epilepsy-associated KCNC2 potassium channel mutation to interneuron dysfunction. Proceedings of the National Academy of Sciences of the United States of America, 121(3), e2307776121.

Romani A, et al. (2024) Community-based reconstruction and simulation of a full-scale model of the rat hippocampus CA1 region. PLoS biology, 22(11), e3002861.

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

Mohácsi M, et al. (2024) Evaluation and comparison of methods for neuronal parameter optimization using the Neuroptimus software framework. PLoS computational biology, 20(12), e1012039.

Cavarretta F, et al. (2023) Modeling Synaptic Integration of Bursty and ? Oscillatory Inputs in Ventromedial Motor Thalamic Neurons in Normal and Parkinsonian States. eNeuro, 10(12).

Hunt S, et al. (2023) Strong and reliable synaptic communication between pyramidal neurons in adult human cerebral cortex. Cerebral cortex (New York, N.Y. : 1991), 33(6), 2857.

Dainauskas JJ, et al. (2023) Altered synaptic plasticity at hippocampal CA1-CA3 synapses in Alzheimer's disease: integration of amyloid precursor protein intracellular domain and amyloid beta effects into computational models. Frontiers in computational neuroscience, 17, 1305169.

Yao HK, et al. (2022) Reduced inhibition in depression impairs stimulus processing in human cortical microcircuits. Cell reports, 38(2), 110232.

Kaneko K, et al. (2022) Developmentally regulated impairment of parvalbumin interneuron synaptic transmission in an experimental model of Dravet syndrome. Cell reports, 38(13), 110580.

Buchin A, et al. (2022) Multi-modal characterization and simulation of human epileptic circuitry. Cell reports, 41(13), 111873.

Linaro D, et al. (2022) Cell type-specific mechanisms of information transfer in data-driven biophysical models of hippocampal CA3 principal neurons. PLoS computational biology, 18(4), e1010071.

Eriksson O, et al. (2022) Combining hypothesis- and data-driven neuroscience modeling in FAIR workflows. eLife, 11.

Bologna LL, et al. (2021) The EBRAINS NeuroFeatureExtract: An Online Resource for the Extraction of Neural Activity Features From Electrophysiological Data. Frontiers in neuroinformatics, 15, 713899.

Allam SL, et al. (2021) Neuronal population models reveal specific linear conductance controllers sufficient to rescue preclinical disease phenotypes. iScience, 24(11), 103279.

Wybo WA, et al. (2021) Data-driven reduction of dendritic morphologies with preserved dendro-somatic responses. eLife, 10.

Hjorth JJJ, et al. (2020) The microcircuits of striatum in silico. Proceedings of the National Academy of Sciences of the United States of America, 117(17), 9554.

Masoli S, et al. (2020) Cerebellar Golgi cell models predict dendritic processing and mechanisms of synaptic plasticity. PLoS computational biology, 16(12), e1007937.

Gonçalves PJ, et al. (2020) Training deep neural density estimators to identify mechanistic models of neural dynamics. eLife, 9.

Iavarone E, et al. (2019) Experimentally-constrained biophysical models of tonic and burst firing modes in thalamocortical neurons. PLoS computational biology, 15(5), e1006753.

Rumbell T, et al. (2019) Dimensions of control for subthreshold oscillations and spontaneous firing in dopamine neurons. PLoS computational biology, 15(9), e1007375.