

Resource Summary Report

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PyNN

RRID:SCR_002715

Type: Tool

Proper Citation

PyNN (RRID:SCR_002715)

Resource Information

URL: <http://neuralensemble.org/PyNN/>

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Description: Software Python package for simulator-independent specification of neuronal network models. In other words, you can write the code for a model once, using the PyNN API, and then run it without modification on any simulator that PyNN supports (currently NEURON, NEST and PCSIM). The API has two parts, a low-level, procedural API (functions `create()`, `connect()`, `set()`, `record()`, `record_v()`), and a high-level, object-oriented API (classes `Population` and `Projection`, which have methods like `set()`, `record()`, `setWeights()`, etc.). The low-level API is good for small networks, and perhaps gives more flexibility. The high-level API is good for hiding the details and the book-keeping, and is intended to have a one-to-one mapping with FacetsML. The other thing that is required to write a model once and run it on multiple simulators is standard cell models. PyNN translates standard cell-model names and parameter names into simulator-specific names, e.g. standard model `IF_curr_alpha` is `iaf_neuron` in NEST and `StandardIF` in NEURON, while `SpikeSourcePoisson` is a `poisson_generator` in NEST and a `NetStim` in NEURON. Only a small number of cell models have been implemented so far.

Abbreviations: PyNN

Resource Type: software development tool, software application, software resource

Defining Citation: [PMID:19194529](#)

Keywords: python, software

Funding:

Availability: CeCILL license

Resource Name: PyNN

Resource ID: SCR_002715

Alternate IDs: nif-0000-23351

Alternate URLs: <http://pynn.gforge.inria.fr/>

Record Creation Time: 20220129T080215+0000

Record Last Update: 20250411T054758+0000

Ratings and Alerts

No rating or validation information has been found for PyNN.

No alerts have been found for PyNN.

Data and Source Information

Source: [SciCrunch Registry](#)

Usage and Citation Metrics

We found 53 mentions in open access literature.

Listed below are recent publications. The full list is available at [FDI Lab - SciCrunch.org](#).

Johnsen KA, et al. (2024) Bridging model and experiment in systems neuroscience with Cleo: the Closed-Loop, Electrophysiology, and Optophysiology simulation testbed. bioRxiv : the preprint server for biology.

Schoepe T, et al. (2024) Finding the gap: neuromorphic motion-vision in dense environments. Nature communications, 15(1), 817.

Robens M, et al. (2024) NoC simulation steered by NEST: McAERsim and a Noxim patch. Frontiers in neuroscience, 18, 1371103.

Herron DL, et al. (2023) Carers' experiences of caring for a friend or family member with dementia during the Covid-19 pandemic. Dementia (London, England), 22(3), 576.

Jones A, et al. (2023) Bridging Neuroscience and Robotics: Spiking Neural Networks in Action. Sensors (Basel, Switzerland), 23(21).

van der Kamp J, et al. (2022) In their own words: A narrative analysis of illness memoirs written by men with prostate cancer. *Sociology of health & illness*, 44(1), 236.

Jakubik P, et al. (2022) Suspension of insurers' dividends as a response to the COVID-19 crisis: evidence from the European insurance equity market. *The Geneva papers on risk and insurance. Issues and practice*, 47(4), 785.

Kaiser J, et al. (2022) Emulating Dendritic Computing Paradigms on Analog Neuromorphic Hardware. *Neuroscience*, 489, 290.

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

Steffen L, et al. (2021) Benchmarking Highly Parallel Hardware for Spiking Neural Networks in Robotics. *Frontiers in neuroscience*, 15, 667011.

Pilla RM, et al. (2021) Global data set of long-term summertime vertical temperature profiles in 153 lakes. *Scientific data*, 8(1), 200.

Du Y, et al. (2021) The growth of plants and indigenous bacterial community were significantly affected by cadmium contamination in soil-plant system. *AMB Express*, 11(1), 103.

Bogdan PA, et al. (2021) Towards a Bio-Inspired Real-Time Neuromorphic Cerebellum. *Frontiers in cellular neuroscience*, 15, 622870.

Zaeem M, et al. (2021) Corn-Soybean Intercropping Improved the Nutritional Quality of Forage Cultivated on Podzols in Boreal Climate. *Plants (Basel, Switzerland)*, 10(5).

Knight JC, et al. (2021) PyGeNN: A Python Library for GPU-Enhanced Neural Networks. *Frontiers in neuroinformatics*, 15, 659005.

Pei Z, et al. (2020) Design and characterization of novel oxyntomodulin derivatives with potent dual GLP-1/glucagon receptor activation and prolonged antidiabetic effects. *Life sciences*, 253, 117651.

Papasavvas CA, et al. (2020) Propagating Activity in Neocortex, Mediated by Gap Junctions and Modulated by Extracellular Potassium. *eNeuro*, 7(2).

D'Angelo G, et al. (2020) Event-Based Eccentric Motion Detection Exploiting Time Difference Encoding. *Frontiers in neuroscience*, 14, 451.

Fleming JE, et al. (2020) Self-Tuning Deep Brain Stimulation Controller for Suppression of Beta Oscillations: Analytical Derivation and Numerical Validation. *Frontiers in neuroscience*, 14, 639.

Tingley D, et al. (2020) Routing of Hippocampal Ripples to Subcortical Structures via the Lateral Septum. *Neuron*, 105(1), 138.