

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

Availability: Free, Available for download, Freely available

Resource Name: PyNN

Resource ID: SCR_002715

Alternate IDs: nif-0000-23351

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

License: CeCILL license

Record Creation Time: 20220129T080215+0000

Record Last Update: 20260810T040334+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 54 mentions in open access literature.

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

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.

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.

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.
- 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.
- Pilla RM, et al. (2021) Global data set of long-term summertime vertical temperature profiles in 153 lakes. *Scientific data*, 8(1), 200.
- Steffen L, et al. (2021) Benchmarking Highly Parallel Hardware for Spiking Neural Networks in Robotics. *Frontiers in neuroscience*, 15, 667011.
- 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.
- Tingley D, et al. (2020) Routing of Hippocampal Ripples to Subcortical Structures via the Lateral Septum. *Neuron*, 105(1), 138.
- 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.
- Papasavvas CA, et al. (2020) Propagating Activity in Neocortex, Mediated by Gap Junctions and Modulated by Extracellular Potassium. *eNeuro*, 7(2).
- Dai K, et al. (2020) The SONATA data format for efficient description of large-scale network models. *PLoS computational biology*, 16(2), e1007696.
- 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.