

Resource Summary Report

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MUlti SImulation Coordinator

RRID:SCR_001756

Type: Tool

Proper Citation

MUlti SImulation Coordinator (RRID:SCR_001756)

Resource Information

URL: <https://github.com/INCF/MUSIC>

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Description: Software that allows large scale neuron simulators to communicate during runtime. It allows exchange of data among parallel applications in a cluster environment, interconnects large-scale neuronal network simulators with each other or with other tools, participates in multi-simulations, and is continuously developed and extended. Three simulators currently have MUSIC interfaces: Moose, NEURON and NEST. Three applications execute in parallel while exchanging data via MUSIC. The software interface promotes interoperability by allowing models written for different simulators to be simulated together in a larger system. It enables re-usability of models or tools by providing a standard interface. As data are distributed over a number of processors, it is non-trivial to coordinate data transfer so that it reaches the correct destination at the correct time. Current and future simulators can make use of MUSIC - compliant general purpose tools and participate in multi-simulations, for example when: * Different parts of a complex nervous system model are optimally implemented in different simulators, and need to communicate with each other. * Post-processing of generated data is needed, where the amounts of data are too large for intermediate storage, and requires the simulator to pass the data directly to the post-processing module. A standard interface enables straight-forward independent third-party development and community sharing of interoperable software tools for parallel processing. * Library and utilities are written in C++, uses MPI. * It is possible to add a MUSIC interface to existing simulators. * Works independently, no assumptions are made about other applications to facilitate development of general purpose tools. * Performance Data transport with high bandwidth and low latency.

Abbreviations: MUSIC

Synonyms: INCF MUSIC simulator

Resource Type: simulation software, software application, software resource

Defining Citation: [PMID:20195795](https://pubmed.ncbi.nlm.nih.gov/20195795/)

Keywords: modeling, multi-simulation, nervous system, network, neural, parallel processing, simulator, simulation

Funding: International Neuroinformatics Coordinating Facility

Availability: Free, Available for download, Freely Available

Resource Name: MUlti SImulation Coordinator

Resource ID: SCR_001756

Alternate IDs: nif-0000-10265

Old URLs: <http://www.incf.org/programs/modeling/music>

License: GNU General Public License, v3

Record Creation Time: 20220129T080209+0000

Record Last Update: 20260905T132438+0000

Ratings and Alerts

No rating or validation information has been found for MUlti SImulation Coordinator.

No alerts have been found for MUlti SImulation Coordinator.

Data and Source Information

Source: [SciCrunch Registry](#)

Usage and Citation Metrics

We found 204 mentions in open access literature.

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

Haghighatshoar S, et al. (2025) Low-power Spiking Neural Network audio source localisation using a Hilbert Transform audio event encoding scheme. Communications engineering, 4(1), 18.

Tian F, et al. (2025) MIMO radar DOA element position error correction method based on overlapping reference element matrix reconstruction. Scientific reports, 15(1), 18557.

Giri A, et al. (2025) Localization of Realistic Spatial Patches of Complex Source Activity in MEG. bioRxiv : the preprint server for biology.

Hu B, et al. (2025) Rewired m6A methylation of promoter antisense RNAs in Alzheimer's disease regulates global gene transcription in the 3D nucleome. bioRxiv : the preprint

server for biology.

Wojtas AM, et al. (2025) Multi-scale integration of human brain vascular and CSF proteomes reveals biomarkers of cerebral amyloid angiopathy linked to Alzheimer's disease risk. medRxiv : the preprint server for health sciences.

Lewicki P, et al. (2025) Rapid cycle, randomised testing of precision feedback to improve engagement with a process measure dashboard amongst urologists: study protocol for a hybrid trial. BMJ open, 15(5), e092742.

Yin J, et al. (2025) Enhanced ultrasound particle image velocimetry (E-uPIV) enables fast flow mapping of microvasculature. Communications engineering, 4(1), 88.

Pei T, et al. (2025) Spatial Blind Source Estimation of Respiratory Rate and Heart Rate Detection Based on Frequency-Modulated Continuous Wave Radar. Sensors (Basel, Switzerland), 25(4).

Hu B, et al. (2025) Rewired m6A of promoter antisense RNAs in Alzheimer's disease regulates neuronal genes in 3D nucleome. Nature communications, 16(1), 5251.

Gil-Martínez A, et al. (2025) An electronic toll collection gateway BLE RSSI dataset for localization of smartphones in vehicular scenarios. Scientific data, 12(1), 396.

Dautle MA, et al. (2025) Single-Cell Hi-C Technologies and Computational Data Analysis. Advanced science (Weinheim, Baden-Wurttemberg, Germany), 12(9), e2412232.

Li C, et al. (2025) An indoor positioning method based on bluetooth array/PDR fusion using the SVD-EKF. Scientific reports, 15(1), 4579.

Kaneko H, et al. (2025) Topographically driven vigorous vertical mixing supports mesoscale biological production in the Tsugaru Gyre. Nature communications, 16(1), 3656.

Khorsandi S, et al. (2025) Targeted STING Activation Using Modified Ultrasound-Responsive Microbubbles Enhances Immune Checkpoint Blockade Against Melanoma. Advanced science (Weinheim, Baden-Wurttemberg, Germany), 12(22), e2416596.

Radhakrishnan V, et al. (2025) Reducing soft tissue artefacts through projection of markers and microwave imaging: An exploratory study. Scientific reports, 15(1), 7679.

Wang W, et al. (2025) Numerical Simulation Study on the Impact of Blind Zones in Ground Penetrating Radar. Sensors (Basel, Switzerland), 25(4).

Seale C, et al. (2025) MUSICiAn: Genome-wide Identification of Genes Involved in DNA Repair via Control-Free Mutational Spectra Analysis. bioRxiv : the preprint server for biology.

Jyoti , et al. (2024) Comprehensive analysis of computational approaches in plant transcription factors binding regions discovery. Heliyon, 10(20), e39140.

Ghazinouri B, et al. (2024) Navigation and the efficiency of spatial coding: insights from closed-loop simulations. Brain structure & function, 229(3), 577.

Shabbir A, et al. (2024) Enhancing smart home environments: a novel pattern recognition approach to ambient acoustic event detection and localization. *Frontiers in big data*, 7, 1419562.