

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: software resource, software application, simulation software

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

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Record Last Update: 20260801T190135+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 203 mentions in open access literature.

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

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.

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.

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).

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

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.

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.

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

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*.

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

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

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.

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*.

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

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

Wen X, et al. (2024) Single-cell multiplex chromatin and RNA interactions in ageing human brain. *Nature*, 628(8008), 648.

Wang Y, et al. (2024) Surgeon Skill and Perioperative Outcomes in Robot-Assisted Partial Nephrectomy. *JAMA network open*, 7(7), e2421696.

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