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: http://www.incf.org/programs/modeling/music

Proper Citation: MUlti SImulation Coordinator (RRID:SCR_001756)

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 multisimulations, 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 postprocessing 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, simulation software, software application

Defining Citation: PMID:20195795

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

simulator, simulation

Funding: International Neuroinformatics Coordinating Facility

Availability: Open unspecified license

Resource Name: MUlti SImulation Coordinator

Resource ID: SCR_001756

Alternate IDs: nif-0000-10265

Old URLs: http://www.incf.org/about/programs/modeling/music-multi-simulation-coordinator

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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 185 mentions in open access literature.

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

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

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

Rustamaji, et al. (2024) The angle of arrival estimation of frequency-hopping cooperative object based on software-defined radio. Scientific reports, 14(1), 7732.

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

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

Symons AE, et al. (2024) Informational masking influences segmental and suprasegmental speech categorization. Psychonomic bulletin & review, 31(2), 686.

Dziadosz D, et al. (2024) What Do We Know So Far About Ventricular Arrhythmias and Sudden Cardiac Death Prediction in the Mitral Valve Prolapse Population? Could Biomarkers Help Us Predict Their Occurrence? Current cardiology reports, 26(5), 245.

Li T, et al. (2024) Accurate depth of anesthesia monitoring based on EEG signal complexity and frequency features. Brain informatics, 11(1), 28.

Gross RS, et al. (2024) Researching COVID to enhance recovery (RECOVER) pediatric study protocol: Rationale, objectives and design. PloS one, 19(5), e0285635.

Brahmbhatt A, et al. (2024) Adapting and deploying a digital program for training non-specialist providers on a brief psychological intervention for depression in rural Gujarat, India. PLOS global public health, 4(12), e0003967.

Gutiérrez-Sacristán A, et al. (2024) Development and validation of an open-source pipeline for automatic population of case report forms from electronic health records: a pediatric multicenter prospective study. EBioMedicine, 108, 105337.

Subramanian L, et al. (2023) Patient perspectives on factors influencing active surveillance adherence for low-risk prostate cancer: A qualitative study. Cancer medicine, 13(1).

Wang Y, et al. (2023) A HOOI-Based Fast Parameter Estimation Algorithm in UCA-UCFO Framework. Sensors (Basel, Switzerland), 23(24).

Zhang J, et al. (2023) A Sparse-Array Design Method Using Q Uniform Linear Arrays for Direction-of-Arrival Estimation. Sensors (Basel, Switzerland), 23(22).

Tang G, et al. (2023) Dynamic Gesture Recognition Based on FMCW Millimeter Wave Radar: Review of Methodologies and Results. Sensors (Basel, Switzerland), 23(17).

DiBianco JM, et al. (2023) Practice patterns and outcomes of urgent versus elective ureteroscopy in a statewide surgical collaborative. World journal of urology, 41(1), 221.

Zhang Z, et al. (2023) Localization of mechanical and electrical defects in dry-type transformers using an optimized acoustic imaging approach. PloS one, 18(11), e0294674.

Mathur S, et al. (2023) Coach-Supported Versus Self-guided Digital Training Course for a Problem-solving Psychological Intervention for Nonspecialists: Protocol for a Pre-Post Nested Randomized Controlled Trial. JMIR research protocols, 12, e41981.

Zhou Y, et al. (2023) A new Bayesian factor analysis method improves detection of genes and biological processes affected by perturbations in single-cell CRISPR screening. Nature methods, 20(11), 1693.

Jones BD, et al. (2023) Validating a measure of motivational climate in health science courses. BMC medical education, 23(1), 548.