NEST Conference 2023



Contribution ID: 9 Contribution code: T4

Type: Talk

NEST-SONATA: Fast parallel instantiation of explicitly specified large-scale neuronal network models

Thursday 15 June 2023 13:00 (20 minutes)

Simulating brain-scale models requires parallel computers to provide enough memory to represent network connectivity and efficient instantiation of complex network connectivity on massively parallel computers. While scalable data structures and algorithms for storing and accessing connections in parallel are available [1-3], efficient parallel instantiation of such networks has received less attention. Network connectivity can be defined either rule-based [4] or through explicit tabulation of connections, e.g., using the SONATA format [5]. Even for models of limited size and complexity, such as a model of the mouse cortex with more than 9 million point neurons connected by 25 billion synapses, SONATA specification files comprise nearly 500 GB of data in mostly binary format (HDF5). We present here an implementation of direct support for efficient instantiation of networks from SONATA specifications in the NEST simulator [6] as a result of the HBP NEST-SONATA infrastructure voucher.

Acknowledgements

This work has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under Specific Grant Agreement 945539 (HBP SGA3; HEP, NH, HBM, SBV, SK) and was supported by the Allen Institute, by the National Institute Of Biomedical Imaging And Bioengineering of the National Institutes of Health under Award Number R01EB029813, and the National Institute Of Neurological Disorders And Stroke of the National Institutes of Health under Award Numbers R01NS122742 and U24NS124001 (KD, AA). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. We acknowledge the use of Fenix Infrastructure resources, which are partially funded from the European Union's Horizon 2020 research and innovation programme through the ICEI project under the grant agreement No. 800858.

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Topic area

simulator technology and performance

Keywords

Simulation, Modeling, Large-scale networks, High-performance computing, Connectome

Speaker time zone

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Poster & advertising flash talk

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Session Classification: Talks