

Resource Summary Report

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Neuroshare - Open data specifications and software for neurophysiology

RRID:SCR_000005

Type: Tool

Proper Citation

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Resource Information

URL: <http://neuroshare.sourceforge.net/index.shtml>

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Description: Neuroshare aims to develop a standard for accessing neurophysiological data from any vendor's acquisition device or software. An API is defined, and vendors and communities are encouraged to provide implementations of a library of functions that can read data files collected with that vendor's instrument or software. The neuroshare.org website is a collaborative, vendor-neutral area dedicated to public domain standards and software for neurophysiology. This website is part of an SBIR program funded by the National Institute for Neural Disorders and Stroke and it is currently being administered by Bionic Technologies, LLC. The goals of the SBIR program are to (Phase I) create open library and format standards for neurophysiological experiment data and (Phase II) create a set of free, open-source software tools for low-level handling and processing of neurophysiological data. Upon completion of Phase I and II, neuroshare.org will be maintained by a yet to be determined consortium of government, academic and industry partners. The SBIR was awarded in the fall of 2001 and Phase I officially began in Dec, 2001. The detailed goals of the program are summarized below: Phase I goals : (1) Establish a working group to develop and define the API library of functions. (2) A vendor-neutral web site to facilitate the development of the standards and software and publish the completed products. This site has been dubbed Neuroshare. The home page can be found at neuroshare.sourceforge.net. (3) An open, standardized API library definition for accessing neurophysiology data files. This will allow developers to produce analysis programs that can access a variety of proprietary data formats through libraries supplied by the data format owners. The manner of support will be completely determined by the research groups and vendors that supply the libraries. The Phase I standard was created by a working group consisting of international members from industry and academia. Draft standards were published for public review and comment on the neuroshare web site and

revised by the working group. The grant has been awarded as a fast-track program so that Phase II begins immediately upon completion of the Phase I milestones in June 2002. Phase II will produce:

- (1) A set of neuroshare-compliant API libraries for existing data formats developed in collaboration with individual equipment vendors and research groups.
- (2) A utility for analyzing compliant API libraries for integrity and specification conformance, as well as for error checking imported data files.
- (3) A set of template programs in C that are meant to be used as an example on how to create a Neuroshare API compliant library and how to call it from an application.
- (4) An open, standardized file format for neurophysiological experiment data. This format will provide research groups and vendors with a file format for exchanging and/or publishing neural data. The format will also be powerful enough for use as a native format for researchers or vendors that wish to support it in data acquisition hardware/software.
- (5) Import filters that interface neuroshare-compliant API libraries to Visual Basic, MATLAB, and LabVIEW, NeuroExplorer, and Stranger analysis environments.
- (6) A utility program for quick header information viewing and searching to aid the organization and management of data files in the standard and proprietary formats.
- (7) A data file editing program for reviewing, editing, annotating, and splicing neural data files through the neuroshare API libraries and/or standard file formats. The suite will be developed in C, optimized for speed, and will run within 32-bit Windows operating systems. The availability of source code will enable eventual ports to Unix/Linux if desired.
- (8) An add-on for the editing program that will allow review and real-time playback of multi-modal data accessible through the API and/or standard file format. These modes will include neurophysiological signals such as spikes, local field potentials and EEG, as well as experimental signals such as kinematics, stimulation, audio, video, and imaging data.
- (9) C and MATLAB framework programs for detection and classification of extracellular spikes in the standard data files based on classical and user-supplied algorithms.
- (10) A complete MATLAB application for reading data from the standard format and performing reverse correlation analysis. This program will serve as a tutorial and modifiable template for users performing analysis in MATLAB.
- (11) A set of export filters for creating neurophysiological data files with the neural simulation environments NEURON, NEOSIM, GENESIS, and NSL.
- (12) A comprehensive documentation, and help file set for all of the developed applications.

Phase II will require two years of development work and software products will be made available as they are completed. As stated above, the Phase II software products will be made available as free, open-source tools. We have not decided on a license model yet, but are currently leaning towards the GNU General Public License. Revisions and bug-fixes will be maintained through the neuroshare.org website. The mission of neuroshare.org is very focused, but the specific goal list of Phase II may evolve somewhat as software is released and user feedback is received. We are very interested in public suggestions about how to improve this development effort and web site. Please direct your feedback to comments@neuroshare.org or refer to our contacts page for other addresses.

Background This endeavor grew out of a meeting held at the Society for Neuroscience 2000 Annual Conference in New Orleans (agenda posted [here](#)) to discuss the development of standard data formats for neuroscience. From this meeting, it was clear that although everyone supported the idea of better data portability, many vendors present wanted a standardized API (Application Program Interface) library rather than a universal data format. Based on this meeting, we submitted an SBIR application (with letters of support from key attendants of the SFN meeting) to fund the development of a standardized API definition, data format, and a suite of open source data handling and review tools.

Synonyms: Neuroshare.org

Resource Type: software library, software resource, software toolkit

Keywords: data management, development, interoperability software, software

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Ratings and Alerts

No rating or validation information has been found for Neuroshare - Open data specifications and software for neurophysiology.

No alerts have been found for Neuroshare - Open data specifications and software for neurophysiology.

Data and Source Information

Source: [SciCrunch Registry](#)

Usage and Citation Metrics

We have not found any literature mentions for this resource.